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### The Halford Oration.<sup>1</sup>

#### THE MARCH OF CARDIOLOGY.

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I AM very proud and honoured to have been asked to deliver an oration to commemorate a man distinguished in the great profession of medicine. One whose memory is cherished by a very large number of medical men today and should be cherished by all the citizens of Australia, he was the founder of the Medical School in Melbourne, and is recognized as a man of great character, originality and courage amongst the people of this country. Previous orators have dealt with various aspects of the late Professor Halford's life and work, and it is my privilege as the orator for 1934 to deal with a matter which has only been touched upon by previous orators.

<sup>1</sup> Delivered at the Institute of Anatomy, Canberra, on November 20, 1934.

I am going to endeavour today to give you a bird's-eye view of a subject in which the man, whose memory we seek to perpetuate, was more than ordinarily interested. I am calling the oration that I deliver today "The March of Cardiology", and I have chosen this subject because from Professor Halford's actions and writings it seemed to be very dear to him, and in spite of the fact that it is so many years ago since he wrote on the subject of the heart, his opinions are quoted even to this day.

I should like to take you, in the course of my address, through the various gradations of our knowledge of the heart and its action. This means that I have to go hundreds and even thousands of years back in order to obtain a proper perspective, and it is probable that those who listen will be more than surprised to know that the simplest facts in regard to the circulation of the blood and in regard to the heart's action and other matters associated with the heart and blood vessels which we regard today as ordinary everyday knowledge, were a closed book to our forbears and opposed to the mysterious views which they took of these matters.

I shall have to divide what I am to say into various more or less arbitrary periods of time in order that the development of the knowledge of the heart and circulation can be at all appreciated, and even then in this oration I shall cover only a small portion of the ground. The periods can be classified into four groups: (i) Pre-Harvey, (ii) Harvey, (iii) Pre-Mackenzie, (iv) Post Mackenzie.

In these groups I shall endeavour to include Professor Halford's observations and those of other world-wide observers and commentators, and I propose to give some explanation, anatomical, physiological, and so on, of the action of the heart and the circulation. I shall speak for a moment on the concepts of the heart and circulation commonly held in the period before Harvey. You will understand that before Harvey discovered and described the circulation of the blood, there were all sorts of extraordinary ideas as to what the blood and the blood vessels were for; indeed, I may say that nobody had any, but superstitious and fantastic, ideas of heart and vessel function. Today almost every child knows that the heart pumps blood by means of its chambers into the general and pulmonary circulations, but it was thought before Harvey that spirits of various kinds were carried by the heart and circulation after being made perfect in the heart itself. The veins were supposed, by some people, to be the means of conduction of the nutriment or nourishment to the various parts of the body.

The arteries, again, were called arteries because they were supposed to contain air, or possibly air and blood mixed together. The very name artery means that the vessel contains air. Another idea was that the blood moved backwards and forwards to the heart and vessels by the same channels, and still another theory was that fuliginous vapours passed from the heart to the vessels. Then, again, from the very conformation of the heart, observed apparently at various *post mortem* examinations before Harvey's discovery, it was thought that the dividing septa of the heart were perforated in places so that the blood could pass from one side of the heart to the other through the small perforations. As a matter of fact we know from records now that the interventricular septum is very often perforated, and that the observations are reasonably exact, but that the conclusions are unsound. It was even supposed that the heart itself moved. The blood vessels were regarded by a great many as part of the nervous system, but the fact is that even prior to the time of Harvey knowledge of anatomy was really quite extensive, that of the great Vesalius concerning the anatomy in general and that of the heart and circulation in particular were quite extraordinary; and it is astounding even in this year, 1934, to have the privilege of reading the illuminating writings of Vesalius and William Harvey.

The general anatomy of the heart and of the pulmonary and systemic circulations was well known and it seems, bearing in mind what had been observed and elaborated and almost understood, that it remained for William Harvey to have the privilege of discovering the secret of the circulation. It simply emphasizes what an extraordinarily able and out-

standing man William Harvey must have been. It is, of course, impossible to give in detail Harvey's masterpiece of his discovery—the circulation of the blood—but I may tell you with pride that his book "*De Motu Cordis et Sanguinis*" is one of those documents of uncommon rarity for its marvellous lucidity and completeness. You will understand that those observations were made by Harvey on living animals, and he took such pains to prove that his observations were correct that his book today stands by itself as a monument of acumen, observation and deduction. Harvey then was the founder, the discoverer, and on his work one relies for the whole fabric of knowledge of the heart and circulation which we have today.

Our knowledge of the anatomy and physiology of the heart has not progressed *pari passu* with various other developments in our knowledge of rhythmicity and therapeutics. Intimate detail of the heart's procedure has become more widely known, and the heart's action has been more widely studied, but you will realize that Harvey and his predecessors had none of the instruments of the professional man of today with which to put their knowledge to the test, and it is not tremendously to our credit that our knowledge is not infinitely greater. I shall refer to these instruments later.

#### The Development of the Heart.

The development of the heart from the cardiac tube to the complete organ is now thoroughly understood, and the position of the heart in the foetus and in the adult is accurately known and appreciated. Every anatomist knows, every student knows, that the heart consists of three things, the endocardium, the myocardium, the pericardium, and that the heart is a pump.

The blood supply of the heart has become more and more important with the efflux of time, and today the knowledge of the blood supply of the heart and of interference with it is not only necessary, clinically, but is paramount in diagnosis. Heart muscle is known to have certain attributes established by Engelmann and Gaskell fifty years ago, irritability, contractility, rhythmicity, and conductivity. It has also other attributes, one being that it has maximal contraction, and another that it is refractory and it cannot be tetanized like skeletal muscle.

The nerve supply of the heart is from the deep and superficial cardiac plexuses, and the anatomy of the heart has already been referred to. The most important part of the heart for our purpose is what is known as the conduction system, and this, generally, is regarded as consisting of various parts, beginning with the sino-auricular node which lies at the junction of the superior *vena cava* at the right auricular appendix. This node is modified muscle fibre, and this part of the heart tissue is thought to initiate the heart beat, and is called the pace maker. The next most important part of the conduction system is that very specialized tissue which is known as the auriculo-ventricular node and which is identical in construction to the sino-auricular node. The next important is the auriculo-ventricular bundle or bundle of His, and in the human being this auriculo-

ventricular bundle vanishes in terminal arborizations, and these end in the papillary muscles and the ventricular wall.

It is now regarded, and has been regarded for many years, but for some reason discounted, that the conduction system of the heart or the Purkinje system, as it should properly be named, is a network of cells of unusual character penetrating throughout the myocardium and carrying the cardiac impulse. The more recent concepts of the conduction system are in opposition to the views expressed by Stanley Kent, who was the first observer of this important piece of anatomy, and who believed that the Purkinje system was part and parcel of a ramification extending in the heart substance from the great veins to the arborizations in the ventricular wall. It is probable that what was described by Stanley Kent in 1892 holds good today, and the conducting part that he discovered is the Purkinje system or network of cells which I have already mentioned.

It was a matter of mystery to the older observers as to how the heart worked, and I have already mentioned that the queerest ideas were prevalent even in the time of Vesalius, 1514-1564, and the heart was still thought to be a source of heat to the body and, so to speak, the initial centre from which life, or, as they thought it, the essential humours of life, were poured. Observers realized that the heart beat and the pulse were one and the same thing, but they did not realize that the heart and blood vessels contained blood during life; it was noticed that the arteries, as has already been observed, contained no blood after death. Galen had seen the heart beat, and it is possible that the human subject had been used for the same demonstration as had been observed by Galen in animals. Galen was the authority for the passage of the blood through the inter-ventricular septum, but it remained for that extraordinary individual, Leonardo da Vinci, to see that it was possible that the heart, as part of its function, could drive liquid blood into the arteries. It was, of course, left to Harvey to discover that there was such a thing as the circulation of the blood, and his outstanding work has already been touched upon. In recent years it has to be appreciated that the microscope and other adjuncts of physiology have added to our knowledge, and the knowledge of the use of electricity has advanced our information so much that it is still impossible to appreciate exactly all we know about the function of the heart. It is possible, even now, that we are on the verge of a great discovery, and I venture to say that the problems of the heart function may be consummated in biochemistry; and, though I think that biochemistry may not provide the whole explanation of the beginning and ending of the cardiac function, I think we are approaching what I may call an epochal period. The demonstration by Dale of chemical propagation of the nerve impulse in the myocardium by liberation of acetyl-choline is immensely significant.

In explaining the various actions of the heart, our knowledge, to a very great extent, of the spread of the cardiac impulse depends upon the electrical variations of the beating heart, and a great deal of the knowledge today must be derived from that

source. I shall have to go into some detail of this intricate subject, but at the moment I may say that the sino-auricular node is the starting point of the normal heart beat. Electrocardiography will be spoken of at a later stage, but experience has shown that if the sino-auricular node be removed, there is set up a new impulse formation, and that new impulse formation is in the auriculo-ventricular node. We know from experiment that the sino-auricular node can be controlled by warming or cooling, and this affects the whole heart. We know by experiment that the impulse spreads through the auricles quite uniformly, and we know by experiment that the impulse spreads through the only connexion between the auricles and ventricles, and that is the auriculo-ventricular bundle of His. We know that if the bundle of His is divided in two by experiment or destroyed by disease, the auricles and ventricles act quite independently of one another, that is to say, the auricles beat at a rate which is controlled by the sino-auricular node and the ventricles beat at quite an independent rate which is determined by themselves; but where that impulse arises in the ventricles, or how, is not yet understood.

I have spoken of the impulse from the sino-auricular node through the auricles, and this spreads in its turn to the ventricles through the bundle of His, each branch going to a ventricle individually. It has been shown that if you divide one branch going to one ventricle, the other ventricle receives the normal auriculo-ventricular impulse, and this is important because it is possible to determine the kind of block of impulse which occurs in a great many cases of heart disease. This knowledge of electrocardiography is probably one of the greatest advances that has been made in cardiology in all time, and it has certainly done more to explain the heart's action and its pathology than almost anything that has been done in relation to the heart.

I have pointed out that our knowledge of physiology has advanced in the last few years, and it becomes apparent that the knowledge of the normal heart under the microscope can be of the greatest importance in recognizing what happens in disease. The use of the microscope has shown conclusively that the heart can be seriously affected, though the defect cannot be recognized by the naked eye, and we realize that what appears a normal heart may, on microscopic examination, be found to be grossly affected by pathological changes, and conversely the heart very grossly affected to the naked eye may not show, as far as the heart's function is concerned, more than minor degeneration under the microscope.

The importance of the study of the normal conditions of the heart compared to diseased conditions is fully appreciated and recognized, and nobody more than Corvisart appreciated the value of pathological study. I think that today the correlation between physiological study, clinical observation, and pathological investigation should be the basis of all modern teaching. Before the discovery or advent of the stethoscope the diagnosis of heart conditions was not only precarious, but difficult, and more often wrong than right, but we can recognize



so many things now, clinically, and prove from pathological study that the pathology of the heart has not only become a *post mortem* study, but a possible clinical prophecy.

The blood supply of the heart has become more and more important in recent years: it is furnished by the coronary arteries, right and left, which arise separately at the root of the aorta. The blood supply of the auricles varies considerably, and may be from either artery. The blood supply of the ventricles is by the right and left coronary vessels, most of the right supplying the right ventricle. The left coronary artery supplies the rest, and some parts are supplied by both vessels. It has to be noted that the coronary arteries are to all intents and purposes end-arteries, and the occlusion of these arteries causes an infarct, and infarction by occlusion of the left coronary artery may cause serious or fatal results to the heart. A great deal of work has been done recently in the investigation of the coronary vessels, and some very interesting work in the radiographical anatomy of these vessels has been performed by my colleague Dr. J. V. Duhig.

The anterior descending branch of the left coronary artery is of outstanding importance in that it is more often affected than any of the others, or indeed all of them. It actually supplies both ventricles, and particularly the apex of the left ventricle, but there is, however, anastomosis between this artery and the right in their papillary distribution. It has to be remembered that the vessel may be completely or partially closed without the nutrition of the heart being affected, and one extraordinary fact is that this connexion becomes more and more established as the individual gets older, and further, the immediate effect of closure is less grave in outlook, other things being equal, in a man in his sixth decade than it would be in a man in his third decade.

The physiologists, that is, those who have made a study of the living pathology of the heart, in common with the clinicians or bedside investigators, are those who have made the greatest contributions to our knowledge of heart disease, and, valuable as the work in morbid anatomy has been, the trail has been blazed by clinicians and physiologists. It seems extraordinary in these days of specialism that Corvisart was regarded nearly two hundred years ago in the light of a heart specialist. In the work of cardiology one of the epoch-making discoveries and one which had a revolutionary effect on clinical medicine was the introduction of auscultation by Laennec in 1819. His accounts of his discoveries, by the way, of physical signs in lung disease can be read and enjoyed and appreciated as models of accuracy to this day. The name of Laennec stands out like a beacon light in any discussion on cardiology, and it is refreshing to relate that his discoveries were accepted in his life, and actual descriptions of his work even now are masterpieces, like Harvey's, of lucidity and accuracy; but in his work on cardiology we know today that he was wrong. One of the investigations which went far to explain the production of heart sounds lies to the credit of George Britton Halford, whose memory we honour today, and his work is regarded as authoritative even as recently as 1933 in the *Archives of Medicine*.

Hope, in 1841, had given a description of experimental work that he had done, and Halford, in 1851, published a description of what is known as "Halford's experiment", which demonstrated that the muscular element was absent in the production of the first heart sound. In Halford's experiment the superior and inferior *vena cava* and the pulmonary veins at the entrance of the auricles were tightly compressed between the fingers and, the heart continuing its action, a stethoscope was again applied, but neither the first nor second sound was heard. This work of Halford's has been resuscitated quite recently, and demonstrates the keen observation and logical deduction of the master mind. Halford did not receive credit, either during his lifetime or for a considerable time later, for the brilliant observations that he had made. It is quite easy to realize what a tremendous advance median auscultation, as introduced by Laennec, made in clinical knowledge before the various irregularities were properly understood.

Experiment in the laboratory and proper systematic observation on the hearts of animals were probably the first evidence of the exact movements of the heart, and, arising from these experiments when it was possible to keep the heart alive for quite a considerable period, the effect of interference with the nerve supply and the action of drugs on the heart were noted.

#### George Britton Halford and his Relationship to Mackenzie.

The subject of this oration, George Britton Halford, was born one hundred and ten years ago, and he became a medical student when he was eighteen years of age, but he had a wide and varied experience before he was destined to become an outstanding medical man in Australia. Further, he possessed a peculiar combination of abilities, because he was not only a sound medical man, but he was a scientist of no ordinary attributes. He must also have possessed a wanderlust, and we know from results that he was a born man of experiment. Looking back almost a hundred years ago, when Halford became the founder of the Melbourne Medical School, it is almost impossible to visualize what a tremendous task he had before him. Halford was a thinker, he was an experimenter, a physiologist; he was indeed a *rara avis*, and when you come to realize that he made anatomy correlative to physiology you can understand he made a tremendous advance in research.

One of the things that Halford directed his attention to, possibly influenced at the time by others, was the study of the heart's action, and he made strenuous efforts to solve a difficult problem. I need not enter into the various difficulties, trials and tribulations which Halford had to face when he accepted the appointment to the Melbourne chair, but the fact is that he had the courage to accept a post of unknown quality, of unknown quantity, himself well equipped and ambitious and full of hope that he would have his ideas consummated. It is to his credit that he not only accomplished his task of founding the Melbourne Medical School, but he established a curriculum and a standard which are not only commendable, but approved by much older foundations. He impressed



those who met him with his quality, with his frankness, and with his originality, and it seems, when all is said and done, that Halford in his day was a striking example of the influence of that indescribable quality that is known as personality.

I am briefly trying to carry out a survey of the various investigations and various works that have been done in the development of cardiology, and I am of the opinion that Halford holds today a very high place in that development. I have spoken quite briefly of the work that has been recorded by Professor Halford, the various, not only interesting but permanent, observations that were made as far back as 1851. Halford was at that time the Professor of Anatomy, Physiology and Pathology at the Melbourne University, and it requires some imagination to conceive a man in the medical profession capable of occupying so many important positions at one time. He gave in his time many interesting lectures, and they are on record to this day as monuments of the observation, veracity and accuracy of the man—a man of extraordinary capacity and mind.

I have already observed that he was interested in research on the heart, and this is the basis of my oration today. His original experiment on the sounds of the heart in 1851, published in *The Lancet*, was the forerunner of other well conceived experiments, and his observations have not only been kept alive to this day, but they show the ability and adaptability of the man whose memory we seek to commemorate as a leader, an observer, and a recorder.

I think one of his most important observations was that on the heart and pericardium in which he showed that the pericardium not only enfolds the heart, but seeks to control and facilitate the heart's movements. One of his outstanding observations consisted in exposing the heart by laying open the pericardium, the guiding action of the pericardium being then lost and the heart being tumultuous and ungoverned. Another and very important observation that he made was the fact that the apex of the heart remained a fixed point and that the apex beat had nothing whatever to do with it. He demonstrated by experiment that this was the case, and that when contraction occurs in the ventricles a portion of the ventricles becomes convex and produces the apex beat. One further important matter that Halford studied and which has already been touched upon, is the question of the heart sounds, and his work on heart sounds remains classical today. Let me quote from his lecture in October, 1864.

On the 31st October 1860, after many failures, I heard the heart sound in a very large python under great excitement; it is impossible to describe sounds, but taking those of man as standards of comparison I will say that except during the most perfect stillness they were inaudible, but when the first sound was heard it was distant, dull and short, and the second did not differ much from it. The number of pulsations was from 26 to 30 per minute.

He also investigated the heart sounds of the alligator, the snapping turtle, the tortoise, and the edible turtle. He observed, for example, that in the edible turtle, although he applied a small stethoscope direct to the heart and he listened for

an hour and a half, he could not hear a sound; but when he removed the heart from the body and listened, the heart still contracting, he heard a very distinct blowing sound with every contraction of the ventricles. It seems tragic that some of his work was spoiled by the unfortunate passing of the hearts of the animals which he investigated to the "bottle-o" people of his time. He examined the hearts of other animals, particularly birds, eagles, geese and ostriches, and he found that the sounds in the ostrich differed little from those of man. It really is a tribute even today when we cannot be quite sure of the origin of heart sounds, to know that a man of Halford's type possessed such originality, invention and resource as we find exhibited in his publications seventy years ago.

It is hard to visualize, in Halford's time, how much was known and how little was appreciated of the pathology and treatment of heart disease, and one has to realize that even a man of great distinction like Sir William Broadbent was a perfect novice compared to a man of the calibre of Sir James Mackenzie, who followed him. Sir William Broadbent published a book in the last year of last century, and it incorporated his views as learnt from Sibson and his own observations with others from 1866 to 1899. He says in his preface that:

Up till 1866 there had not, so far as I am aware, been any systematic study and exposition of the indications by which the probable course of disease of the heart in different cases might be foreseen, and ideas which tended to obscure the interpretation of the symptoms and physical signs were held by physicians of great experience and authority.

The prognosis of heart disease is worthy of special study, not only on account of its inherent importance but also because now it enables the medical man to forecast clearly the course of disease, constituting the best preparation for its treatment. The subject of treatment did not enter into the scheme of lectures but it is engrafted upon them in the present work, etc.

When he gave his lectures he presupposed the knowledge of heart disease on the part of his audience, and he did not think it necessary to give any minute exposition and analysis of the symptoms and physical signs by means of which the diagnosis of the different valvular and structural affections of the heart is arrived at. He merely mentioned in his book, almost in passing, intermittent action of the heart and irregular pulse and James Mackenzie. The great worker in the insignificant town of Burnley in Lancashire is referred to casually in two places.

The work of Broadbent, important as it was in his time, merely emphasizes to us in our time how significant and how peerless was the work of Mackenzie. And wise as we may think we are today, our wisdom is surely largely the result of the observations of the painstaking and accurate Mackenzie.

It is expedient to mention, at this stage, the invention of instruments which had a very large influence on the study of cardiology. Those instruments gave certain scientific data of real value, and the first was the sphygmograph or the instrument for recording the pulse, and the second the sphygmomanometer for recording the blood pressure. With the use of the first instrument, the sphygmo-

graph, various abnormal types of pulse were recognized, and the sphygmomanometer became literally the *vade mecum* of the practising clinician, to whom its use is a matter of everyday practice. The sphygmograph, however, has become, to a very great extent, a mere scientific toy, not because it is useless, but because it is delicate and difficult to transport. The sphygmograph has passed more or less into the limbo of unnecessary instruments, but there was a time when the sphygmograph, polygraph, clinical polygraph, and the ink polygraph were not regarded as being luxuries in the diagnosis of cardiological disease, but were absolutely necessary in accurate diagnosis.

We know perfectly well nowadays that the ordinary case of heart trouble can be diagnosed by usual clinical methods, but in Mackenzie's day it was thought that no case could be diagnosed without recourse to one or other of these instruments. It is a tribute to Mackenzie and to his work when we realize that he played a lone hand, graduating from the little town in Lancashire to the great metropolis of London, finally to become in the world of cardiology the "beloved physician". There is no question that Mackenzie raised the standard of cardiology from guess work to exact clinical interpretation. If one judged Mackenzie alone on the wonderful work that he did on the pulse, quite apart from what he did later on the irregularities of the heart, he enjoys a very high place indeed, possibly the highest that can be accorded in the history of cardiology.

With Mackenzie came the advent not only of the various instruments which we have spoken about, but the electrocardiograph was extensively used by him. It had long been known that muscle movements are accompanied by changes in electrical potential of the active or contracting part relative to its resting or passive portion. Thus, when a strip of muscle is stimulated at one end the wave of contraction which passes through it is accompanied by an electrical disturbance which follows a similar course. In 1856 Kolliker and Müller demonstrated the presence of "current of action" in the heart, and by laying a frog nerve and muscle preparation in contact with the beating heart they were able to record two distinct electrical changes occurring during each cardiac systole. In 1887 Waller showed that the electrical variations of the human heart could be demonstrated by connecting two suitable points of the body with the capillary electrometer, and five years later Bayliss and Starling obtained satisfactory tracings in the mammalian heart.

In 1903 Einthoven introduced his new instrument, the string galvanometer, and with its advent into hospitals clinical electrocardiography was brought into being. A fine silver-coated quartz fibre or other substance suspended in a magnetic field forms the central part of the string galvanometer. The fibre, therefore, can move in response to the minute electrical current which passes through it at each heart beat. These excursions of the fibre, strongly illuminated by a suitable lamp, are magnified by the microscope, so that it is possible to record them on a moving photographic film, and this is called the electrocardiogram. The entrance of the electro-

cardiogram has absolutely revolutionized our knowledge of many cardiac conditions, and Mackenzie and his successors, particularly Lewis, who carried on the Mackenzie tradition with him, have used this information to elucidate many, if not all, of the abnormal rhythms found in the heart's action.

In dealing with the work of Mackenzie it is impossible to go through the immense volume of clinical and experimental work which lies to his credit, but the fact is that nobody has done more to explain the irregularities of the heart's action than Mackenzie. The first and possibly the most important thing to recognize is the passage of the normal impulse in polygraphic and electrographic tracings. It is vital that those who deal with these matters should recognize the difference between normal tracings and what are known as irregular or "arrhythmia" conditions. These arrhythmias can be grouped and have been grouped by Mackenzie as coming under certain headings: auricular, nodal, ventricular, bradycardia, or those produced by the normal sequence of contraction of auricles and ventricles. Any form of graphic method must, in order to be of any use, be described exactly, as well as the cardiac mechanism, whether normal or abnormal.

In cardiological medicine knowledge has to be adopted and adapted by instrumental methods for instantaneous use, and it is possible by these graphic methods to understand the physiological arborizations involved in a great many types of irregularities which are met with in ordinary practice. It is, of course, possible for a careful examiner to diagnose arrhythmia in a great many varieties, by examination of the heart by a stethoscope, and with the finger on the pulse, and by observation of the jugular and carotid impulses. But even keen observation must be quick, and will invariably fall short of the exact methods of the polygraph and the electrocardiograph.

One can look upon the work of Mackenzie as a natural corollary of the work of Halford, not because they were men in the same sphere of activity, but because Halford was a precise observer and Mackenzie was similarly a man of remarkable observation. Halford wrote and observed to try and find out why things happened, Mackenzie wrote largely because he wanted to find out how to treat things properly. However careful Halford was to observe the physiology of the heart's action, Mackenzie observed, not only what Halford had already noted, but the effect of treatment on the disordered heart. Mackenzie remarks in the preface of his work "Diseases of the Heart" as follows:

In routine practice it is not usually necessary to take graphic records, one can ultimately acquire the power of recognizing the majority of movements of the circulation without graphic records.

That probably sums up the whole difference between the points of view of Professor Halford and Sir James Mackenzie, because Halford was a physiologist first and Mackenzie was a physician first. Whereas Halford obtained information from physiological experiment and laboratory work, Mackenzie stands out as one of those who learned

what he describes by the hard road of experience in general practice.

Two men stand out as object lessons in my time in medicine. Sir James Mackenzie was one of those who taught medicine according to the rule of common sense, and anybody who reads his book, even today, will be surprised at the extraordinary leap he made from guess work to sound deduction. The other name which comes to my mind, of the same period, and which is of outstanding personality, is that of Sir William Osler, and he represents in his writings and observations the common-sense outlook. There is so much that Mackenzie did in the advance of cardiology that it is possible to give within a small compass but the briefest survey of his work, at the same time it is of paramount importance to realize the kind of work that he did. It is right to emphasize what is the most important of the work accomplished by him. Probably, looking back, I would say that outstanding in his work is the separation by means of the polygraph of the innocent type of arrhythmia from what he regarded as the malignant type of arrhythmia. One has to remember that prior to the time of Mackenzie all irregularities of the heart were looked upon with a very jaundiced eye, and any irregularity could be regarded, and probably was regarded, as a matter of very grave importance. To Mackenzie stands the credit of the knowledge of the differentiation between paroxysmal tachycardia and paroxysmal auricular fibrillation, a matter of considerable importance, because the treatment of the paroxysmal tachycardia and of the paroxysmal auricular fibrillation are entirely separate and different.

Probably just as important a point in Mackenzie's work was the observation in regard to clinical heart block in children, because prior to his time these cases were regarded as being of grave importance when they were really of no great significance. Possibly, and finally in regard to Mackenzie, one matter that he taught and what has become fundamental in cardiology is the relative unimportance of the valvular disease of the heart and the unnecessary stress that was laid on the prognosis of cases in which valvular defects were discovered.

After electrocardiography the use of X rays in cardio-radiology has marked a definite advance in the last few years. It can be said that cardio-radiology is indispensable today, and many facts can be learned by such procedure. It is impossible to go into the minutiae of this subject, but I may mention one or two of the important effects of the introduction and elaboration of cardio-radiology. The first one and the most important of these effects is the diagnosis of heart disease in children. In children condemned to inactivity, to special schools, or even invalidity, it has been shown frequently by radiographical methods that the heart, in spite of the cardiac murmur, is normal in shape and size. Another group of cases just as important includes the functional murmur in adult life; and patients so affected include those who are condemned as sufferers from organic heart disease, and particularly those placed under the heading of "V.D.H." (valvular disease of the heart) of the War *débris*. The third group consists of cases of congenital heart disease, and

radiology is a powerful factor in the diagnosis of these cases.

The next notable advance is the early diagnosis of rheumatic heart disease, particularly emphasized by John Parkinson in 1933. This is not so much in Australia as in other countries where rheumatic heart disease is prevalent. Finally, the early diagnosis of syphilitic disease of the aorta has been made possible by the use of radiography.

#### Cardiology and the Public Health.

It seems to me that quite apart from the academic and clinical aspects of heart disease there is an important and very serious question to be considered as to whether heart disease cannot be prevented, and if it cannot be prevented, whether the effect cannot be mitigated to a very large extent. No serious effort, as far as I am aware, has been made in this country to prevent or to check the very large stream of ill health which arises from heart disease.

There has been in the past a collection of institutions, very often merely names, well equipped, but not sufficiently imbued with the idea of prevention rather than cure. It is known to all who are interested in cardiology that certain places enjoy a reputation for the treatment of persons suffering from disease of the heart, but the problem is very much larger and very much more important than can be encompassed by the efforts of a town or towns and by one set of individuals. It will require coordination of effort of various public bodies in order to get adequate results. It is not appreciated by the public, it is probably not appreciated by a very large number of medical men, how many patients with disease of the heart and circulation are treated in the public hospitals in Australia. It is probable that in Australia the number of cases of actual heart disease is not relatively as great as in the European countries. We know from experience in Queensland that the total number of cases of rheumatic heart disease which are seen in Europe and America are not encountered in Queensland. But if we take cases affecting the circulation generally, heart and arterial diseases including arteriosclerosis and nephritic conditions, relatively common in Queensland, it will be seen that circulatory disease is probably the most powerful factor in the destruction of human life that we have to contend with.

It is difficult, of course, to get any exact estimate as to the sickness due to heart disease or other factors (such as affections of the kidney and blood vessels) as we deal very largely, for statistical purposes, with public hospital patients only, whereas in order to get a proper perspective one would have to include not merely the public hospital patient, but the private patient as well; and on the private patient we get no particulars or very few particulars which would enable us to estimate how common and how devastating heart disease is. The fact remains that the loss on the economic side of the community in heart disease is a very large and very important factor, because the sufferer becomes not merely a debit to the labour market, but he becomes very often an *ipso facto* charge on the public purse. We must not forget the pain and suffering which the individual



must undergo as a result of his disease. The fact is that probably the loss of time and of economic usefulness in cases of heart disease is very much greater than what to the public is of outstanding importance, that due to pulmonary tuberculosis.

Just to give some idea of the importance of heart disease in the matter of public interest it should be remarked that the majority of sudden deaths are due to heart disease of the degenerative arterial kind. The point that I wish to bring out is that the causes of heart disease that bring about invalidity and death are in a large measure, if not entirely, preventable. I cannot help thinking that something can be done to prevent premature breakdown or sudden death in those who are very young, and I wonder whether something could not be done to prevent premature unfitness of the adolescent or middle-aged or invalid.

It is difficult to compare, generally speaking, the possible causes in the breakdown of the circulation. It may be thought by various people who are interested in the problem that work, particularly hard work, is a predominant factor in bringing about a crisis in the circulation. Everybody who practises medicine knows, however, that the outstanding cause of catastrophe in these cases more often has something to do with the habits or disease of the individual. It is, indeed, more commonly a personal factor than an industrial one. Occupation may, it is possible, cause some serious interference with circulatory efficiency, particularly in those who are intermittently employed or in those who are elderly. It has to be remembered that individual temperament may play an important part.

It would be, of course, impossible to estimate without meticulously scientific and accurate figures how much damage could be done to persons whose circulation is destroyed owing to physical or temperamental unfitness. It is well known that a man who is used to a certain type of work, even though he may suffer from heart disease, may be better equipped to perform the labours of his occupation than a man who is perfectly physically fit but who is unused to that particular type of work. No effort, as far as I am aware, has ever been made to discover the relative efficiency of those who are apparently physically perfectly fit and of those who may be damaged to some extent. The only means which could possibly attain any degree of success in estimating the efficiency or non-efficiency of persons in any type of work would be the precise examination in regard to the circulation of persons employed, particularly in arduous occupations. This would require a complete and cordial association and cooperation between employers and employed, and stress would have to be laid on those who do the heaviest work. Let it be instanced that men like ironmoulders, puddlers, rail straighteners and dock labourers who do a heavy type of work, continuous or intermittent, should be examined regularly, and it would be possible by a regular examination to find out how conditions discovered could be classified.

The classification of heart disease falls largely into two categories, those which are organic and those which are congenital, disregarding those which are

functional. Any scheme to prevent a reduction in heart disability must assume that congenital heart disease will hardly be altered in this instance by human knowledge. No scheme could possibly prevent disease due to old age, but would be useful in preventing, or at any rate alleviating, the arteriosclerotic changes which take place in people over forty years of age, and that by a discipline in habits and life or by reduction or prevention of infection in youth.

We can assert reasonably that heart disease due to toxic or infectious causes may be prevented or at least recognized in the very early stages, and that thus the disastrous consequences may be obviated or lessened. In this category come those instances due to rheumatic fever, syphilis and over-activity of the thyroid gland.

We have passed in the course of time and in the development of our knowledge of cardiology through various phases indicative of the thought of the time in which various theories were expounded. We have passed from the stage of mystery and imagination, through the stage where the conception of heart disease was one of valvular involvement, to the present day when heart disease is divided by the cardiologist into organic and what are called, more or less euphemistically, functional diseases of the heart.

It has taken a long time to discover that a great many functional disorders are by no means functional, and mostly the irregularities of the heart are regarded as in some measure due to organic disease. The serious possibilities of valvular disease have been discounted since the time of Mackenzie, and the present conception of heart disease lies very largely in the idea of infection and muscular lack of tone. It has to be admitted that there are very many forms of functional diseases which are difficult to categorize, and these include almost a multitude of complaints, various forms of pain, shortness of breath, attacks of faintness, and particularly palpitation of the heart. Let me emphasize that these very symptoms are also regarded by the lay population as meaning something appertaining to the heart, just as almost every other functional complaint is regarded by the laity as something affecting the "nerves".

We know from experience that the vast majority have nothing whatever to do with organic heart disease, but are referable in almost every case to some stomach disorder, lack of sleep or other preventable cause. It really means this, that to those who are ignorant of medicine it is easy to place functional disorders in the organic sphere; and it has to be admitted that it is often a matter of considerable difficulty in odd cases to place these conditions into their proper category. It is in these cases that the intimate knowledge of cardiology possessed by those who have made a study of that science comes in most usefully, as they can differentiate in almost every case between actual organic disease and disease due to reflex or functional disorders.

In considering the attitude of the lay population to heart disease, one has to remember that sudden death is one of the tragedies most people dread, not that there is anything very horrible to the individual

in sudden death, but because most people pray to be delivered from the horror of sudden, or as it really means unprepared, death. Most people regard the heart, and rightly so, as the supreme factor in life and death. Every person looks upon any sudden trial, or even prolonged trial, as a matter in which the heart alone can prevent irretrievable disaster. They appreciate the value of an efficient heart and its possibility for a long and useful life. It is thus that the knowledge of cardiology, the knowledge of the difference between the normal or nearly normal or efficient heart and the heart which may in the near future or the not far distant future be a source of discomfort or actual disaster to its possessor, is valuable to the medical practitioner. No matter how much we value the work of the specialist in cardiological matters, the public will have to look to the general practitioner at all times for the preliminary efficient guidance and tuition in matters affecting the heart. It is not intended, nor would it be appropriate, to deal with the matter of treatment, but it has to be said that efficiency in treatment in cardiological conditions has very largely been improved and enhanced.

A great deal will depend on early diagnosis, and here again the knowledge of the general practitioner of his patient, of the temperament of the patient, and of the habits of the patient, is of paramount importance.

#### Cardiac Strain and Workers' Compensation: Medico-Legal Aspect.

There arises out of any discussion on cardiology a discussion on the effect of strain on the heart, and this is a natural corollary. In these days the medico-legal aspect of heart strain is of great importance. It can be assumed in the ordinary course of life that exercise of any kind has a beneficial effect upon the functional capacity of an organ, but there are cases in which extraordinary demands on that function may have a deleterious effect. It is always impossible, or at any rate difficult, to say who is normal, and one could say that harmful effects seldom occur even if a normal person is temporarily overloaded in regard to almost any function. The contrary occurs in disease, because, as is quite obvious, very little may be required to upset the capacity for work in an already damaged organ.

In an individual with an ordinary capacity for work there is a limit to which he allows himself to go, and, except in the unusual case in which an individual belongs to a team or crew, he stops short of actual damage or even exhaustion or fatigue. He does that because consciously or subconsciously he feels that he may do himself irreparable harm. It is possible to postulate that a normal heart will suffer no harm, or very little harm, if the individual indulges in prolonged or violent exertion. Halford maintained that this is due to the support of the enclosing pericardium. On the other hand, a previously damaged heart may suffer, not merely from acute interference with its function, but possibly from a decline in the general health of the owner. This is a matter of very serious social and medico-legal importance, and today when every worker is assured

of compensation on account of injuries contracted in or arising out of employment, a realization of the fact that the normal heart cannot be injured is of very great medico-legal interest as well as of general importance.

It has to be realized that previously damaged hearts, particularly those hearts which suffer from coronary disease, may suddenly and without rhyme or reason become irreparably ruined. It is very difficult to say whether those hearts with coronary disease may be damaged by work, and I am of the opinion that, seeing that probably 80% of the cases of fatal coronary disease occur during sleep or in the quiescent period of the day, it is more likely that the case is exceptional in which actual coronary block occurs during exercise or effort. This question is a matter of very great importance, and I have yet to learn any dictum which will guide us in arriving at an estimate, even after *post mortem* examination.

I am almost unwilling to introduce into this oration the position of the cardiologist, because he has one of the most difficult tasks to perform in medicine, and this task comprises not merely a diagnosis of disease, but he has to be able to assess the value of symptomatology, and by this knowledge of procedure has to use the correct methods of investigation and, after trial and treatment, or even before that, to give a reasonably accurate prognosis. It is almost a truism to say that the sooner a disease is recognized and the sooner the cause of the disease is eliminated, the sooner the patient is cured. So that it is important in cardiology to recognize, not merely from the patient's point of view, but from the clinician's point of view, the early symptoms and signs of disease; and the greater the knowledge the individual physician has, the more rapidly will he arrive at correct conclusions and correct treatment. Subjective sensations are without a doubt the most important of the earliest indications that can be received by the examining clinician, and it is difficult to realize that there is not a single sensation or hardly a single sensation known to man that has not been investigated from alpha to omega.

There is a great deal of work to be done before the whole aspect of cardiology can be thoroughly understood. There is one point that I should like to stress, and that is the view which is held by the family practitioner. It can be maintained with truth that the family practitioner is the backbone and the keystone of medical science, even in cardiology, in which case Sir James Mackenzie was a shining example. The family doctor is entirely different in his point of view from those who live in hospitals, from those who live in the consulting rooms of specialists, and from those who live in the test tubes of laboratories; and still his opinion in regard to the relationship between secondary disease and actual heart disease is probably more valuable than is realized by the average layman and by almost every specialist.

It is thought by most people that it is necessary for a body of specialists to examine a patient in order to make a diagnosis, and the reason for this is that medicine, even cardiology, is so complicated that one man cannot understand it all. That is

certainly true. The point is that the man of experience, the man of mature judgement, will probably eliminate that which is not necessary, and will follow the outstanding sign or symptom to its logical conclusion.

Medicine is not an exact science, and even cardiology, much as it has advanced in recent years, can hardly be classified as based solely on one single sound principle. Symptoms are often mistaken for disease and one of the greatest difficulties in medicine is to assess the value of symptoms and signs in any given anatomical or physiological domain.

CHRONIC ALCOHOLISM: BEING EXPERIENCES AND  
CONCLUSIONS OF A GENERAL PRACTITIONER  
AFTER NEARLY FOURTEEN YEARS OF  
ADDICTION, WITH RECOVERY.

By AN ANONYMOUS CONTRIBUTOR.

THIS article is written with a dual purpose. It may help someone placed in a similar state to that in which I struggled and will also, I think, add some knowledge at first hand of certain physical and mental effects of the state of chronic alcoholism. I shall endeavour to give exact details noted from time to time (for notes were actually taken after the event) of unusual symptoms and mental processes. Some of these details I have not seen elsewhere described.

Naturally the writer's name is withheld from publication, as one is not proud of such a lapse into a definitely degrading state. Points brought out are of such a personal character that the reader will forgive the frequent use of the first person singular.

At the outset I would explain that my make-up—physically, mentally and morally—was, I am sure, quite normal. Until the age of twenty-six I had not tasted spirits—never having the desire to do so—and at that time I was somewhat contemptuous of any man who had "had too much". There was no alcoholic weakness as an heredity. I had suffered no illness except a pneumonia at about eighteen years of age; I was fairly muscular and of good, sound constitution.

It will help little, I think, to detail the causes of the gradual slip into the chronic state, except to explain that the universal carelessness of men on active service took hold, and later I found that the daily amount of alcohol was an established state of affairs with me. Many men, of course, dropped the habit completely on return to civil life. Others never got very deeply into it, and there is to my mind a mental characteristic in some men which will tend to take them deeper into such a vice as regular drinking. There is a mental type which does nothing by halves, whether it be some laudable undertaking or the slipping into a vice. Such a nature is often a sensitive one, and this point may be of help later in "pulling up" and succeeding in one of the most difficult physical and moral undertakings—that of reestablishing a normal out of a very diseased alcoholic body and mind.

It was probably a misfortune in my case that I secured a country hospital appointment after the war. With a good private practice, and unopposed, everything was too easy. Had I been obliged to struggle against a good, strong, healthy opposition, probably I should have been brought up with a round turn. As it was, the habit was allowed to continue, so that at the end of 1919 steady spirit drinking was a confirmed habit. A certain amount was taken every day, the dose being repeated when the effects of the last one wore off. Imperceptibly the dose was increased. At this time there was little interference with my work. Operative surgery was undertaken and results were good. Later on, however, it was found very necessary to have a "stiff" whisky before operating. Then all was well, but an attempt to carry out the work without this ended in fear, loss of confidence and tremulous agitation.

That "sense of well-being" described as an early symptom of alcohol is very true. But there is more than this. There is a general optimistic outlook. Everything seems bright and any worries fall into insignificance. A certain irresponsibility takes hold, so that any immediate duties one feels can well be left to the morrow. At this stage life seemed very pleasant. Although I realized that the dose was increasing, the need to steady did not seem imperative, and hence the drift into deeper water. Of a naturally strong constitution, there were no gastric symptoms but what could be put right by the morning dose. The deep satisfaction at this stage is such that there appears no need to check the habit. This is the tragic part, for, later, abstinence is so much more difficult. It was in 1923-1924 that the reaction after drinking became really severe. Then began that utter mental depression, anguish and self-reproach. Efforts to stop the habit made these worse, and so came the realization that the habit had the better of me. I looked on myself as "done", a failure, and seemed to see a hopeless outlook for the future. I was then in a larger town and had the superintendency of the local hospital, again with private practice. Patients were talking, I knew, and some of them going elsewhere, giving me cause for further worry and anxiety, the only relief from which was again spirits.

Success in medical work did not desert me suddenly, however. There was not yet such a state as being incapably drunk, but soon this commenced. To defer consultations was to cause talk. To see patients while in liquor was obviously worse. There was genuine illness every morning—nausea and retching, epigastric pain, tremor and despondency.

I would be called on to operate, perhaps a major operation, and here an extra dose would dissipate all symptoms. Had I attempted to work without the dose I should have had neither nerve nor confidence for any surgery and might have collapsed in the midst of it. But four to six ounces of whisky or brandy *plus* twenty minutes' grace, and things were right. It was not a matter of operating under the influence of liquor, but simply that the terrible reaction of the previous day's indulgence had been



overcome, and I was really back to normal. The hand was steady and the mind without agitation, and quite good work was done. This may sound strange reasoning to any who have not experienced the reaction of heavy drinking. Yet on these occasions I felt and acted more to normality than I had for years.

Every medical man has noted the ingratitude of many patients, their selfishness and meanness, often after invaluable work has been performed on their behalf. I here noted another side of their nature: many remained loyal. Knowing I was unfit, they would wait or make discreet inquiries from a chemist friend and come along later as if nothing were amiss. This and the staunch loyalty of my hospital staff made me try many times to throw the habit off; but alas, the reaction was always too strong and refuge sought in spirits again, the one thing that gave relief. But such experience of people's tolerance repaid me for the many ingrates for whom medical men do so much and from whom they receive scant thanks and no fees.

The chronic drinker does not continue his vice because he likes it. The taste of spirits is often loathsome. It is not that he must have the effect the spirit used to give—the feeling of well-being and stimulation. Continuance is just a frantic endeavour to be rid of the reaction. The terrible depression, self-reproach and physical suffering are so great that one can well understand the suicide. And in getting relief in spirits again the alcoholic gets deeper and deeper into the mire. Even at this stage there is a fair moral fighting force. I have gone four and five days in an attempt to break the habit, unable to touch food. Food simply would not go down. One knows that to give in now after, say, a week, will be to waste that period of suffering, and yet there comes a point at which moral resistance collapses, and that suddenly. The whole thing cannot be faced any longer and so—crash.

A tolerance is undoubted in alcohol indulgence, and the question arises: Is there formed in the system an antitoxin to alcohol which counters its effect, and when alcohol is withdrawn is it this antitoxin unneutralized that acts as a poison? Certainly the sensations of reaction are those of a poison. On one occasion I accidentally took a tablespoonful of tincture of belladonna and did not discover the error till later. I was struck by the similarity of the feeling of collapse in this case and in the case of abstinence after heavy spirit drinking. The only noticeable difference was the dry mouth and thirst with belladonna. Such poisoning would account for the great difficulty in sudden withdrawal of alcohol.

There is similar difficulty in endeavouring oneself to reduce the consumption of spirits and so gradually to break the habit. Reduced amount again gives reaction symptoms and sooner or later in desperation a full dose is reverted to, and so again failure. Sometimes one would be making fair headway by this method, but some more pressing and serious undertaking would crop up, requiring a full

"steadier" to straighten up the faculties, and so the effort would be wasted.

There are certain individual experiences which are of interest. At times, when not too much alcohol is in the system there are flashes of mental activity very far from absurd and at times bordering on brilliancy. In my case ideas have been born in this way and, knowing how fleeting are all thoughts in mild intoxication, I have noted the main points, finding in sober moments later that these ideas, when recalled from the brief notes, can well be acted on. For instance, on one occasion, when driving the motor car, I had a sudden inspiration of how my garden could be recast to advantage. I noted the ideas with a sketch and the plan was weeks later carried out with very good effect. Thought at these times seems quick and makes no impression on the memory. The thought, if not intentionally held, will fly off in some other direction altogether. By taking brief notes at the time I have used these ideas at a later date for newspaper "skits", which have always been accepted.

Is this a stimulant effect? Here it rather seems like it. There is no factor which when inhibited would free mental effort, which here seems a little above normal.

Of minor interest is diplopia, which has occurred at odd times with no apparent added reason for its presence at those times. In motor car driving it was overcome by almost closing one eye. Night sweats became frequent, diarrhoea and constipation alternating. Nausea and retching and epigastric tenderness and uneasiness were now very marked, the last mentioned symptoms being checked again by repeated doses of spirits.

#### Automatism.

A certain automatic state will occur in chronic alcoholism and was exemplified in my case in several ways. In driving my motor car one night I distinctly remember passing another motor car and giving too little roadway for the driver to pass. I heard his shout of disapproval and a period of mental blank followed, for I remembered nothing until I found myself at a cross-road. There were no signposts and I was lost. I suddenly came to myself, as it were, knowing that some time had elapsed between passing the other motor car and my stop at the cross-roads. I had driven in a semi-conscious state. Later on, two men drew up, curious at my stationary car at that hour, and proved to be acquaintances, one of whom drove me home. Making inquiries later I found that the two points on the road were separated by nearly five miles. This stretch had been covered in a state of automatism.

In other instances a good part of a day has left no impression on the memory. Work has been performed, requiring a definite mental effort, with so little consciousness that no memory impression was created. Names of patients scribbled down, later gave no clue to what had taken place at a consultation. There was no memory of ever having seen the person concerned. The work had been put

through in a way and prescriptions written. Investigation later showed these prescriptions to be correct, though mostly of a stock formula. Mostly, too, diagnosis of a simple sort was found to have been correct—perhaps a bronchial case or an acid dyspepsia. At times I found that, having promised to ring through a prescription, I failed to recall the case when the chemist telephoned me for the neglected order. Nothing was known of the patient or his illness and there was no memory of ever having attended him. That my demeanour at the time of consultation cannot have been quite hopeless is shown by the very fact of the patient seeking his medicine, so that my personal appearance and behaviour must have been at those times fairly good, or at least not hopeless. Yet I was in an automatic state in which thought and action were carried out without a very great confusion.

I do not think that this automatism would continue if something more important or more exciting than routine work eventuated. Something amiss would, I am sure, stimulate to full consciousness, for example, the collapse of a patient in one's surgery or some unusual and spectacular accident case. This is rather evidenced by the fact that while in one of these states I was called urgently to a motor smash. There was an immediate mental awakening and though I afterwards remembered every detail of that case and the events that followed, the mind was a blank as to happenings for the previous two hours.

I definitely consider that a criminal act of violence could not occur in this state. The very seriousness of the act contemplated would change the mental state in a flash. Criminal acts of violence do not come under this heading, but under another, which further experience of mine tends to show. At a certain stage of alcoholic indulgence—past the stage of exhilaration, there is a period of mental irritableness in which anger is very easily provoked, and I have more than once been overcome by temper and an uncontrollable desire to strike and to injure the object of my anger. Here there is full recognition of the seriousness of such an act, but a total indifference to its consequences, and on one occasion it was a flashing realization of the fact that I was just an alcoholic that prevented a very serious turn of events, so that instead I broke down completely. I am sure that it is under this latter heading that acts of criminal violence under alcohol must be placed. The criminal is fully aware of wrong-doing, but is indifferent to the consequences.

It has been said that alcohol, lifting all reserve (an inhibitory action), allows the real personality to come to the surface. This scarcely explains the unreasonable anger often present at this state, above mentioned. It is a perfectly blind, unreasoning anger with trivial cause. This is not the true personality represented here, being found in men whose whole nature normally is quite the reverse of anger and violence. Surely here is an instance where the inhibitory and non-stimulating theory of alcohol effects will scarcely serve as an explanation.

The brain seems stimulated, irritated to a mental storm in these cases, and the person is the very reverse of his true self.

#### Fits.

Fits occurred on two occasions during the later years. Once, feeling not very well, I was standing in my garden when suddenly there appeared an aura in the form of a large bright insect approaching towards the right side of my face. I remember striking at it with my right hand and remember, too, the sudden faintness and after that—blank. I was picked up in what must have been an epileptiform state—teeth clenched, eyes staring, and frothing at the mouth—and was unconscious, I am told, for some ten to fifteen minutes. My wife witnessed the fall and it is from her that I learn the details. There were no after-effects. There is no epilepsy in the family history, nor had any fit ever occurred before. At this time there had been for months a slight albuminuria.

On a second occasion I had just risen from a chair to attend the delivery of a placenta, after a fairly difficult effort to deliver the infant without perineal tear, when, although there was no distinct aura, I believe I had some slight warning, for it was with no surprise that I "came to" later. The nature of the attack seems to have been the same in both these instances.

#### Local Paralysis.

It is questionable whether paralysis occurs without the effect of cold. After driving at night in very cold weather and with a habit of resting my right arm over the car window-ledge, I suffered next day an almost complete flaccid paralysis of the whole right arm. Even the deltoid was involved, flexors were slightly less affected. This lasted a full week, after which gradual return of powers took place. There were no sensory disturbances.

As the years passed there was increasing moral degeneration—no desire to keep up with modern progress in medicine, no reading of any kind. Even personal habits suffered, and the result showed in personal appearance and even the finer points in cleanliness. These facts were quite appreciated by me at the time, but with dull indifference. During unsuccessful efforts of regeneration these matters would be corrected, but with the relapse there was the return to carelessness in all things.

#### Regeneration.

As I write it is some years since the successful break away from the alcohol habit. A good deal of the success I put down to the sympathetic companionship of a friend—a Presbyterian minister much my senior—who was essentially a man and who, by the way, never preached. (He was six feet four inches and once had a straight left like a horse's kick.) After years of steady spirit drinking the moral fibre is so undermined that recovery is well nigh impossible without moral help of this sort, that is, outside institutional treatment. With-

out it the alcoholic cannot get over his failure in the past. He feels himself an inferior being and beyond recall.

In my own case another thing helped, once the determination was made to overcome the drug. This method is full of danger, but with me it helped a great deal. I discovered that in the throes of reaction one drachm of laudanum gave the necessary corrective of the nervous depression and aided the physical illness also. There was no narcotic effect. Spirits were entirely stopped and as few doses of laudanum as possible were taken, for fear of one habit replacing the other. I found that with care the laudanum could be reduced and taken less frequently. Realizing, too, that the depression and feeling of exhaustion were associated with fall of blood pressure, I commenced replacing the laudanum with ephedrin, one-half to one grain, repeated, if necessary, and so gradually the laudanum was stopped. There were some of the reaction symptoms to fight, but the tension was very much less and soon the return to normal without the aid of any drug at all was brought about.

The danger of laudanum is admitted. Probably, however, if used by the physician without the patient's knowledge of the nature of the drug, it would be very helpful, being replaced by ephedrin as soon as possible. Then again, the direct attempt to replace spirits by ephedrin might be worth a trial. This was not attempted in my case, but is a field for investigation.

Other stimulants, such as strychnine or *nuxvomica*, I found of little or no help.

A proper understanding of the condition is probably very difficult for anyone never having experienced the difficulties and miseries of the chronic alcoholic. He is mostly condemned out of hand. He knows and feels his position keenly if he is at all sensitive. He does not want sympathy, but craves understanding.

After total abstinence had been established some months it was found that an occasional drink of spirits of any sort gave immediate and very definite symptoms. At first, half to one ounce of spirits would bring marked capillary flushing of the face and neck, sufficient to be very uncomfortable. Also there was present some weight or oppression over the chest anteriorly, and now, after some years later, it is found that though the flushing effect is slight, even moderate quantity of spirits causes a definite tightening up of the bronchial tubes, wheeze and increased respiration rate with an asthmatic inability to fill the lungs. There was some slight sweating also and a feeling of exhaustion. Here we have a definite anaphylactic state following the exhibition of spirits two years and more after the system was swamped with the drug. Although the degree of anaphylactic shock is less, there is a striking parallel in this case and that of use of serum two years or more after previous use. Anaphylactic symptoms after any spirits now are severe enough to prevent indulgence of any kind, even if one were tempted. This again lends weight to the

theory of development of autotoxin in spirit drinking over a long period and the depressant and poisonous action of this when spirits are suddenly withdrawn.

Initial cure is most difficult unless alcohol is replaced by some substance to counteract depression and poisoning. The ideal replacement drug is yet to be found.

#### THE SURGICAL TREATMENT OF CHRONIC DUODENAL ULCER.<sup>1</sup>

By H. C. RUTHERFORD-DARLING, M.D., M.S. (London),  
F.R.C.S. (England),

Honorary Surgeon, Prince Henry Hospital; Honorary  
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Hospital; Honorary Surgeon, Lidcombe  
State Hospital, Sydney.

ALTHOUGH the minds of both physicians and surgeons have been directed towards the problem of chronic duodenal ulceration for over a quarter of a century, the number of papers that appear annually in connexion with the treatment of this malady render it evident that no satisfactory therapeutic scheme has yet been evolved.

Certain physicians favour prolonged medical treatment as a routine measure, no matter at what stage or of what size the ulcer may be. An ideal therapeutic agent for the treatment of duodenal ulcer would be one that would neutralize or combine with hydrochloric acid without having any general systemic action or materially affecting the gastrointestinal secretory or motor activities. Although alkaline powders have been and are being used in the treatment of this malady, it is well known that they are far from ideal.

The other extreme view—a total extirpation of the "ulcer-bearing area"—is equally untenable to a logical observer who views on the one hand undubitable ulcers permanently cured under strict medical treatment, whilst on the other he sees many which are entirely refractory to such measures.

The truth must necessarily be between these two extremes. It cannot be emphasized too strongly that, in uncomplicated duodenal ulcer, medical treatment should be tried first and, on failure to secure healing in spite of a strict and adequate régime, the patient should be handed over to the surgeon.

Unfortunately no reliable evidence is yet to hand whereby one can determine which ulcers will heal under medical measures or which will bleed or perforate. Another difficulty is to decide the relative merits of medical and surgical treatment owing to the fact that, although we have a good deal of statistical data about the late results of surgery, there is as yet not much information available about the late results of medical measures.

Jordan and Kiefer, when investigating the results of medical treatment at the Lahey Clinic, Boston, found that about half the cases showed recurrence within five years.

<sup>1</sup>Read at a clinical meeting of the staff of the New South Wales Community Hospital on June 21, 1934.



As is well known, the prospects of securing sound healing under a medical régime are more favourable in the early stages of the disease and diminish with the efflux of time; hence Dr. N. A. Neilsen reasonably argues that the prompt recognition of symptoms must be an essential contribution to the therapeutics of this disease. Yet Dr. John A. Ryle in a Hunterian lecture points out that the average interval between occurrence of first symptoms and clinching of a diagnosis in uncomplicated cases could be roughly computed as seven years. The medical statistics of the New Lodge Clinic assess this interval as ten years.

As X ray examination has assumed such an important place in the diagnosis of duodenal ulcer, unfortunately frequently to the exclusion of other reliable methods, it is interesting to note that in the British Medical Association collective report of 1929 radiography is credited with only 65.6% of positive results out of 492 cases of proved duodenal ulcer.

The surgical treatment of recalcitrant cases resolves itself into the choice of three accepted surgical procedures: gastro-jejunostomy, gastro-duodenostomy, and partial gastrectomy.

The type of stomach as well as the type of ulcer must be taken into consideration in selecting the appropriate surgical manœuvre for each case.

The frequency of incidence of the four types of stomach, as determined by the shape of the stomach, the position of pylorus relative to the umbilical level, and the lowest point of the lesser curvature as compared to the intercostal plane, is given by Dr. R. W. Mills as: hypersthenic, 5%; sthenic, 48%; hyposthenic, 35%; and asthenic, 12%.

In an investigation of patients suffering from chronic duodenal ulcer (cases with pyloric obstruction or dilatation of the stomach were excluded) admitted into University College Hospital during the years 1927 to 1931, the types of stomach were classified by Dr. H. Seaward Morley as: hypersthenic, 7.8%; sthenic, 44.4%; hyposthenic, 46.8%; and asthenic, 1%. It was further shown that there was a correlation between the type of stomach and gastric acidity, the curve steadily increasing from a minimum in the asthenic to a maximum in the hypersthenic type.

Further, Hurst has demonstrated that, owing to the rapid rate of evacuation of the hypersthenic stomach, this viscus tends to be empty for about four hours during the day (approximately 11.30 to 1 o'clock, and 4 to 6.30 o'clock) and nine hours by night (11.30 to 8.30 o'clock), during which period the continuous secretion of gastric juice is not only more abundant, but also more acid is present than in a normal stomach. In other words, unless suitable therapeutic precautions are instigated, an undiluted gastric juice will enter the duodenum for several hours out of the twenty-four.

Ulceration is practically confined to the first part of the duodenum (duodenal bulb) and ulcers almost invariably arise either on the anterior or posterior wall of this segment. It is not uncommon,

however, for two separate and distinct ulcers to coexist exactly opposite each other; the incidence of these so-called "kissing ulcers" is variously computed as 17.6% (Stewart) and 20.3% (Hauser). Further, approximately 12% of chronic duodenal ulcers are complicated by acute ulcers, of which 8% are gastric and 4% duodenal (Stewart).

Apart from examination of the gastro-duodenal segment, one must emphasize the necessity in every type of gastric operation for careful routine examination of the abdomen and appropriate treatment of any abnormal condition, especially of the gall-bladder or appendix.

#### Gastro-Jejunostomy.

The operation of gastro-jejunostomy introduced by Lord Moynihan for the treatment of duodenal ulcer between 1901 and 1904 not only laid the foundation, but has since become established as the standard surgical treatment for this malady.

For the last two decades this procedure has been almost invariably combined with destruction or infolding of the ulcer. In 1930 Lord Moynihan analysed the figures of the collective investigation instituted by the British Medical Association into the after-history of gastro-enterostomy to determine the difference between a mere gastro-jejunostomy and the above combined with removal or unfolding of the ulcer.

Operation.	Mortality.	"Very Good" Results.
Gastro-enterostomy combined with removal or unfolding of the ulcer	1.8%	81.2%
Gastro-enterostomy alone . . . . .	5.7%	64.5%

Gastro-jejunostomy acts by diverting the acid chyme from the ulcerated area, and there is, in addition, regurgitation of a mixture of alkaline bile, pancreatic juice and *succus entericus* from the afferent limb through the stoma into the stomach. In other words, the mechanical and chemical conditions become ideal for securing healing of the ulcer and, as will be shown, it is rare for ulceration to persist.

The mortality and end-results as performed by rank-and-file surgeons are set forth clearly in an adequate number of cases, followed up for at least four years by the British Medical Association's Honorary Director of Research, Dr. Arthur P. Luff, and published in his collective report. The operative mortality for duodenal ulcer was found to be 5%, and the follow-up showed 89.5% of successes (67.2% perfect) and about 5.4% of failures. The alarmist statements of certain American surgeons must be discounted, as secondary gastro-jejunal ulcer was noted in only 2.8% (all males) of this series.

For some reason, not well understood, American and central European post-operative results show that only about 50% to 70% of patients are cured after this operation, and 20% to 30% do badly.

Some ten years ago James Sherren stressed the importance of performing a fractional test meal

subsequent to gastro-jejunostomy prior to every patient leaving hospital, and issued a warning that those who showed no decrease in gastric acidity required close observation and treatment. He further demonstrated (by Ewald's test breakfast<sup>1</sup>) that in 90% of cases the emptying time of the stomach was short (one-half to three-quarters of an hour), the total acidity reduced by one-half or two-thirds, and free hydrochloric acid was absent, and that in such cases a successful outcome was certain.

To the rank and file of surgeons the above standard is difficult of attainment, but an early post-operative achlorhydria should be established in 50% of cases and an appreciable reduction in the gastric acidity obtained in 80% of the remainder.

Some 5% to 10% of the cases will show either no reduction or even an increase in the acid value, and it is assumed with a fair degree of certainty that the unneutralized acid impinging on the upper portions of jejunum is responsible for the development of gastro-jejunal ulcer. It is now generally agreed that the essential factors concerned in the production of an anastomotic ulcer are the presence of free hydrochloric acid and an infective focus in connexion with the teeth, pharynx, nasal sinuses, appendix or gall-bladder.

Careful and prolonged after-treatment will greatly lessen the danger of this serious complication.

Dr. Charles Bolton has emphasized the important part a reduction of gastric acidity plays in the healing of an ulcer, and in view of the more recent findings at the New Lodge Clinic, "the acidity in cases of ulcer is generally higher after successful medical treatment than before, owing to the disappearance of the associated gastritis", a ready explanation is forthcoming of the collective findings of Mr. Rendle Short:

Given the best medical treatment three out of four cases of gastric or duodenal ulcer, probably more, will become symptom-free. Only 40 per cent. of the patients will remain well and from 15 to 19 per cent. will be dead in about ten years.

It should be noted that the achlorhydria of the early post-operative test meal does not persist in some 50% of cases, hence the advisability of having a further examination undertaken some six to nine months later.

If the fractional test meal of Rehfuess be adopted, it is essential that the tube be not introduced more than eighteen or nineteen inches, instead of the customary twenty-two to twenty-five, otherwise the bulbous end may pass through the stoma into the jejunum.

#### Gastro-Duodenostomy.

Professor D. P. D. Wilkie has pointed out that in the hypersthenic stomach the danger of post-operative gastro-jejunal ulcer is a very real one, and for this reason advocates the substitution of the more difficult operation of gastro-duodenostomy.

<sup>1</sup>A Ewald's test breakfast, which is usually withdrawn at the end of three-quarters of an hour, may show achlorhydria, and yet a Rehfuess test on the same patient may register a moderate amount of free hydrochloric acid when employed for more than two hours.

The duodenum must be effectively mobilized by freeing the overlying colon and dividing the peritoneum and fascia on the lateral side of the second and third parts of this viscus. If this be impracticable, Finney's favourite operation, pyloroplasty, may be used as an alternative measure. Although the acid chyme is diverted into the second part of the duodenum directly opposite the ampulla of Vater, surely the normal antiperistalsis of this segment carries the acid contents back to the bulb, which it reaches even more rapidly than before operation.

Hurst states that there has been an exceptionally high rate of early recurrence of symptoms after this operation, the end-results being less satisfactory than after gastro-jejunostomy. Apparently this procedure tends to fail in the one feature in which gastro-jejunostomy is successful, namely, the healing of the original ulcer.

A detailed investigation into post-operative test meal findings is necessary to assess the true value of this operation.

It is interesting to note that only recently Professor Wilkie has advocated gastro-duodenostomy combined with gastro-jejunostomy for cases characterized by marked hyperacidity associated with pronounced gastric hypermotility.

If it can be definitely established that post-operative gastro-jejunal ulcer occurs with undue frequency in the hypersthenic type of stomach, then an extensive partial gastrectomy would appear to be the operation of election for this group.

#### Partial Gastrectomy.

Serious bleeding usually proceeds from a branch of the gastro-duodenal artery, which means that the ulcer is commonly situated on the pancreatic wall or upper border of the duodenum. It is therefore difficult of access for excision, and one is unable to secure efficient hæmostasis by operations such as gastro-jejunostomy, jejunostomy or ligature of vessels at a distance.

Of 1,072 cases of duodenal ulcer in which operation was performed at the Mayo Clinic in 1921 and 1922, a history of gross hæmorrhage occurred in 184 (18%). Of the 184 ulcers, 46% were single and on the anterior wall; 18% involved either superior or inferior border; 27% were on the posterior wall; and in 9% the exact site could not be determined because of the diffuse character of the inflammatory process.

An anterior crater may be excised and gastro-jejunostomy performed; but for a posterior ulcer the choice is limited to cauterization through an incision in the anterior duodenal wall (followed by gastro-jejunostomy) or some form of resection. Unfortunately it has been noted that if gastro-jejunostomy be performed for a bleeding duodenal ulcer, hæmorrhage is particularly liable to originate from a secondary jejunal ulcer.

For the above reasons it should be clearly understood that those duodenal ulcers which are charac-

terized by bleeding to the exclusion of other symptoms should be subjected to medical treatment. If, however, whilst undergoing an efficient medical régime a patient has two or more severe hæmorrhages, the question of surgical intervention then arises. In such cases it is advisable to make repeated examinations (every eight hours) of both the blood pressure and hæmoglobin percentage, in order that the severity of the hæmorrhage and any recurrences may be noted.

Allen and Benedict suggest as a working rule that those patients who rapidly lose the benefits of blood transfusion after a second severe hæmorrhage should be given a large transfusion and immediately operated on, particularly if they are over middle age. In this so-called "latent type", characterized by intermittent hæmorrhage, the ulcer, as stated above, is usually situated on the posterior wall of the duodenum, frequently penetrating in character, and shows little or no tendency to heal subsequent to gastro-jejunosomy. Further, the lesion, especially if shallow and flat, is frequently difficult to locate; hence certain surgeons have advocated the routine palpation of the duodenal wall from within by means of an ungloved finger inserted through a small incision in the pyloric antrum.

It therefore follows that the only reliable surgical method of affording permanent relief to this class of case is some form of excision.

Partial duodenectomy presents the disadvantage that not only is the posterior wall of the duodenum devoid of peritoneum, but with adequate resection of the stomach there is a danger of insufficiency of the suture line owing to undue tension. As a preliminary step the duodenum may be mobilized to determine the amount of surrounding fibrosis (ulcer tends to become callous) and the possibility of performing resection without undue risk to the patient. The risks of operation are, in particular, injury to the bile and pancreatic ducts or to the pancreas itself.

Partial gastrectomy, in which two-thirds to three-quarters of the stomach are removed, becomes the operation of election for these cases, but this procedure should not be attempted until the patient's condition is such as to make the immediate risk little greater than that of any other major gastric operation. It must be clearly understood that the above operation is safe only when the first part of the duodenum is, or can be, freed and the stump securely closed. The object of the operation is not merely to remove the ulcer, but to produce an achlorhydria or such a small concentration of acid that the ulcer is unlikely to recur; but, as is well known, achlorhydria is by no means always secured by the Pólya type of partial gastrectomy. The investigation undertaken at Middlesex Hospital in 1928 into the remote results of partial gastrectomy showed that the emptying time of the stomach was reduced to under two hours (under seventy-five minutes in half the cases), the resting juice was scanty, being usually under ten cubic centimetres, and achlorhydria was present in 80% of the cases.

In England gastro-jejunal ulcer follows this operation in about 0.6% of the patients operated on.

E. Klein and A. A. Berg, both of New York City, state that achlorhydria can be invariably produced if, at the original operation, left subdiaphragmatic vagotomy (division of the anterior vagal trunk) be performed. This statement is interesting in view of the fact that the experiments of McCrea, McSwiney and Stopford showed that after unilateral vagotomy in animals no variations from within normal limits could be detected. Of course, bilateral vagotomy abolishes psychic (cephalic phase) secretion.

Occasionally after partial gastrectomy acid secretion persists at a high level, hence the wisdom of performing a post-operative fractional test meal prior to the patient's leaving hospital. This persistent hyperacidity is apparently due to the excessive secretion of resting juice so common in cases of duodenal ulcer.

If the patient's general condition or the presence of technical difficulties, such as extensive infiltration, precludes partial gastrectomy, then Professor Hans Finsterer's operation of "resection for exclusion" (gastrectomy with duodenal exclusion or *Resektion zur Ausschaltung*) becomes the most fitting procedure. The pyloric antrum (vestibule) is severed 3.75 centimetres (one and a half inches) from the pylorus, the distal part is closed, and two-thirds of the stomach are then resected, continuity being established by termino-lateral gastro-jejunal anastomosis. The success of this operation appears to depend upon resection of an adequate amount of stomach and avoidance of retrograde filling of the duodenum.

In an endeavour to avoid retrograde filling, Finsterer sutures the proximal part of the gastric cut surface (*Magenstrasse* or *canalis gastricus*) and the unopened afferent jejunal loop together by means of a special "three-angle suture" so as to form a trap excluding the passage of food into the afferent loop.

In 1931 Professor Finsterer reported 566 cases of gastric resection for duodenal ulcer with eighteen deaths, a percentage of 3.1%; of this series 71 cases of "resection for exclusion" which had been followed up for at least three years showed a mortality of 2.1% and 88.7% of very good results, but gastro-jejunal ulcer occurred in 7% of the cases.

It is common knowledge that whilst an ulcer is being treated by medical measures, spontaneous pain generally disappears first, then muscular tenderness, and finally rigidity. The rigidity may, however, persist during the quiescent intervals between "attacks", when, although both pain and reflex tenderness are completely in abeyance, X rays show the presence of an active ulcer, and the stools still contain occult blood, indicating that the ulcer is not yet healed.

In the past the difficulty of proper control and the routine use of subjective evidence have made it difficult to assess accurately the value of the different methods of treatment of gastro-duodenal ulceration. Individual cases present such diverse



clinical courses that, unless some grading into groups be undertaken, many of them would be unsuitable for the purpose of passing judgement with regard to the value of a selected treatment. Further, it must be obvious that the value of subjective evidence has been grossly over-emphasized when estimating healing of peptic ulcers. Just as it is impossible to assess accurately from a patient's history when an ulcer commenced to develop, so it is equally impossible to estimate from a consideration of his symptoms when it has healed. Not uncommonly, especially in syphilitic subjects, a niche or crater grows deeper or an additional one appears during a treatment considered adequate, and yet the patient was subjectively improving or was entirely free of distress.

Conversely, in other patients the defects in topography may diminish or disappear and yet the subjective symptoms become more severe. It is important to recognize this possibility, as otherwise an unnecessary operation may be performed on a patient whose ulcer has healed under a medical régime, or a surgeon, in the belief that some complication has occurred, may be induced to explore for a second time the abdomen of a patient on whom he has successfully operated.

Further, certain of our most intractable patients have a minimum of distress, notably those prone to recurrent and persistent melena, whilst others, objectively controlled with little difficulty, evince the most persistent subjective complaints. For these reasons objective data should be chiefly relied upon in assessing the healing of a gastro-duodenal ulcer, namely, the presence or absence of blood in the stomach and stools, hyperacidity, and definite radiological observations.

Unfortunately X ray evidence is often of comparatively slight assistance in the case of a duodenal ulcer, though always invaluable when the ulcer is situated in the stomach.

In conclusion allow me to quote a golfing simile and reiterate the advice of the editor of *The British Medical Journal*. The analytical tables so carefully compiled by the Association's Honorary Director of Research, Dr. Arthur P. Luff, have established a "par" for the gastro-duodenal course, figures which every physician and every surgeon will by their own methods endeavour to excel.

As the combined attack of a "four ball best ball versus par" favours low scores and greater efficiency, so a surgeon and physician working in cooperation can accomplish results impossible of attainment for either alone. The physician and surgeon, each of whom should be thoroughly conversant with the indications and limitations of both the medical and the surgical treatment, should enter into the closest cooperation, not competition. The more "short markers" who can be produced in either team, the greater the reputation of Australian medicine and surgery.

## Reports of Cases.

### AN UNUSUAL CASE OF PARESIS OF THE LEG MUSCLES.

By J. C. BELL ALLEN, M.B., Ch.M. (Sydney),  
F.R.C.S. (England),

Honorary Assistant Surgeon, Royal South Sydney Hospital.

In December, 1930, I was consulted by a male, aged forty-six years, who complained of weakness of the left leg and pain in the left knee on walking.

Examination revealed tenderness over the inner femoral condyle, no abnormality in the contour of the joint and no swelling thereof. Movements were full and painless, except on forcing extension, which produced slight pain in the tender area. Both the thigh and calf muscles were wasted, the calf being 2.5 centimetres (one inch) smaller than that on the right side, and the thigh 3.75 centimetres (one and a half inches) smaller. The left foot was flat and everted, the right showing a similar condition but to a less extent. The foot joints were unaffected. The other joints showed no pathological changes, nor were any other muscles involved in the wasting process.

Examination failed to reveal any septic focus. There were no sensory changes and reflexes were normal. The general health was good and the man appeared a well nourished and healthy individual. X ray examination revealed loss of lime salts of the inner condyle of the femur and the inner tibial condyle, of the nature of a disuse atrophy. The only apparently relevant point in the past history was an inflammatory condition of the left big toe joint, which had occurred about twelve months previously and had been successfully treated with massage and diathermy. As regards his habits, he was a moderate pipe smoker and a reasonably good beer drinker, having averaged eight bottles a day for the past twenty-five years.

In the absence of septic foci and of any gross nerve lesion, the muscles showing normal electrical reactions, wasting and weakness being the only physical signs, suitable wedges were applied to the shoes to relieve the strain on the inner side of the knee, and massage and exercises were commenced.

A month later wasting had progressed and the quadriceps was no longer strong enough to keep the knee extended. Bristow treatment to these muscles was commenced.

On January 31, 1931, the patient fell and sustained a fracture through the femoral condyles without displacement and with an associated effusion into the knee joint. The limb was put into a plaster splint and massage was instituted. At the end of a month the swelling of the knee had considerably subsided and the patient was able to raise the leg off the bed. A weight-relieving caliper was fitted and walking was commenced. By June he was walking well in a caliper, had full movements of the knee joint, and had only 2.5 centimetres (one inch) difference in the thigh and calf measurements on the two sides. Towards the middle of July the rowing machine and bicycle were added to the list of exercises and the caliper gradually discarded. On September 14 the knees were symmetrical, the calves were the same size and there had been a two-inch increase in the circumference of each thigh. The patient was discharged as fit.

On March 5, 1932, he again reported, complaining of weakness in the right leg and a small effusion into the right knee. The left leg was in good condition. As before, there was nothing other than this to be found, and the exercises, rowing, bicycling *et cetera*, were again commenced. At the beginning of March he could only walk with two sticks and was complaining of pain in the right calf.

At this time, being a married man and subject to the vagaries of a wife who objected to his beer-drinking habit, in that his bottles filled the family ice chest *et cetera*, it being understood that at all times he was strictly sober, he gave up beer drinking for a fortnight to please his wife. Needing, as he did, a liberal supply of fluids, he drank whisky, and within a fortnight of giving up the beer he was walking without sticks, and up till the present time has had no further trouble and has remained well. His colour has become more florid from a slight pallor that he previously had, and his bowels are not so loose as formerly. The possibility of arsenic as a causative factor was investigated, and his hair and his nails were examined, failing to reveal any trace of this substance. This man had for years past imbibed only one brand of beer, and on retrospect he was able to state that all his trouble had started after commencing to drink this particular brand.

What the cause of the condition was I am at a complete loss to suggest, unless it may be that he is sensitive to some particular type of yeast. It was certainly not an alcoholic neuritis, as he is now regularly consuming half a bottle of whisky a day without the slightest ill effect. I regard this case as one of particular interest and should be glad to hear of any similar case and should welcome suggestions as to its aetiology.

#### PREGNANCY FOLLOWING OVARIAN RESECTION.

By IRVING BUZZARD, M.B., B.S. (Melbourne),  
Warrnambool, Victoria.

Mrs. L., aged thirty-four years, consulted me on July 12, 1933, for sterility after thirteen years' married life. She had had the patency of her tubes tested before and she was told that they were normal. Apart from indigestion, she was complaining of nothing. Her periods were regular, lasting three days; they were a little scanty. Her skin was a little dry, but she showed no other signs of hypothyroidism. I tested her tubes and found them to be patent. The only abnormalities detected were enlarged ovaries, the right one more so than the left. I treated her indigestion and gave her Burroughs, Wellcome and Company's "Three Gland Tablets". Owing to illness on my part I did not see her again till September 4, 1933, when she still complained of sterility. I tested the husband, whose spermatozoa were viable. I suggested resecting the enlarged ovaries. This I did on October 4, 1933. The cyst on the right ovary was the size of a walnut and that on the left was a little smaller. Her period on November 22, 1933, was a little freer. This was her last, and on August 31, 1934, I delivered her of a healthy male infant weighing eight and a half pounds.

A comment by Professor R. Marshall Allan is:

While we do not know much about the aetiology of cystic degeneration of the ovary, modern endocrinological work tends to show that in such cases the persistence of cysts prevents the full cycle of maturation of the follicle and *corpus luteum* formation. This means that the hormone in the persistent follicles is in excess and prevents normal luteal formation. In the uterus this results in an alteration in the endometrial changes. Whilst hypertrophy of the mucosa occurs (due to the follicular hormone), the final secretory changes caused by the luteal hormone are incomplete. Uterine bleeding occurs, but the endometrium is not fully prepared for embedding of the ovum, and if the ovum be impregnated it is not retained *in utero*, hence sterility. Operation by removing the persistent cysts allows ovulation to occur in a normal manner, the uterine mucosa to go through the regular cyclical changes which make pregnancy possible and probable, provided that the spermatozoa are viable and any vaginal secretions are not inimical to them.

#### Reviews.

##### SYPHILIS AND ITS TREATMENT.

THE "Modern Treatment of Syphilis", by Dr. Joseph Earle Moore, is an ambitious undertaking and should be a successful one.<sup>1</sup> The book is eminently practical and covers the field of antisyphilitic treatment very fully.

The why and the wherefore is explained in simple language and the material is presented in a well arranged and readable manner. There are some minor details with which we may not be in accord, but the advice given is sound and definite.

The book is clearly printed and there are many useful tables. A wealth of detail has been collected, culled from the united experiences of experts in many branches of medicine who have had the benefit of the observation of clinical material exceeding 18,000 syphilitic patients. At the end of each chapter is an extensive bibliography to assist those who desire to delve still deeper.

One is led by rational stages, chapter by chapter, to consider the majority of the conditions which may require treatment. The discussion of the drugs used in the treatment of syphilis is lengthy, but we think necessary, as many practitioners treat their patients without fully appreciating the usefulness or otherwise of the drugs they use.

The treatment of early syphilis and its complications is dealt with and the simultaneous or separate administration of arsenical and heavy metals is discussed. Arspenamine is the arsenical of choice, and alternating courses of this preparation and heavy metals are favoured, excepting that in the beginning bismuth is given simultaneously with the first four doses of arspenamine. Patients are kept under continuous treatment until there has been no reaction to the Wassermann test for one year.

Eighty-five pages have been allotted to neurosyphilis. The various methods of treatment by induced fever are mentioned and the discussion on that produced by malaria is full of helpful detail.

There is a chapter dealing with syphilis complicated by pregnancy, for which condition arspenamine is recommended, a course of 3.0 to 4.0 grammes (10 to 14 doses) being regarded as a minimum. Bismuth or mercury is given simultaneously.

Cardio-vascular syphilis is introduced with the foreword that "excepting only neurosyphilis and perhaps even exceeding this, cardio-vascular involvement is the most frequent basic cause of death from acquired syphilis". The details of treatment are full and the twelve tables included in this chapter are useful.

Third generation syphilis is mentioned and records show this to have occurred in 4.5% of 171 pregnancies among 88 congenitally syphilitic mothers.

The closing chapter deals with "Syphilis and Marriage". The care necessary on the part of the physician before giving "consent" to the marriage of a patient who has had syphilis or who is non-infective is emphasized. The prospective bride or bridegroom should be aware of the medical history of the patient in every case, for, "if a patient marries with consent, but without telling his fiancée that he has had syphilis, and if she subsequently becomes infected, the physician lays himself open not only to unpleasant recriminations, but to legal proceedings as well".

This book is a welcome addition to publications dealing with the treatment of syphilis and its complications.

<sup>1</sup> "The Modern Treatment of Syphilis", by J. E. Moore, M.D.; 1934. London: Baillière, Tindall and Cox. Super royal 8vo., pp. 535, with illustrations. Price: 22s. 6d. net.

## The Medical Journal of Australia

SATURDAY, DECEMBER 29, 1934.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction, are invited to seek the advice of the Editor.

### ANTENATAL SUPERVISION.

IN a recent issue of this journal maternal mortality and morbidity were discussed in the light of an investigation carried out in New York. Reference was made to that most important factor in the reduction of maternal death and disability, antenatal supervision. This is a subject on which much has been written, but, like many other subjects in preventive medicine, it is one that needs emphasis and reemphasis. It is not that medical practitioners do not know what is required of them, how they can anticipate trouble and avoid it, how they can leave a woman after confinement as healthy as before she became pregnant, and how they can bring into the world infants unhandicapped by birth trauma. Unfortunately, like other people, medical practitioners may become weary in well-doing, and they may forget that the advances, for example, in biological chemistry and in radiological science may be applied to the appraisal of the health of pregnant women and to the prognosis of

the pregnant state. Science, they will admit, cannot stand still; and they must remember that the methods used in antenatal care must keep pace with the progress of biological and clinical science.

A few years ago medical practitioners who wished to guide their patients through the difficulties of pregnancy, delivery and the puerperium, were like preachers of a new doctrine. But times have changed and patients are learning by degrees that obstetric care begins in the first months of pregnancy. No intelligent woman today leaves the engagement of her obstetrician until the later months of gestation. But the preaching must continue. Patients in general do not realize the full significance of antenatal care. To begin with, patients should know that one visit to the medical attendant in the early months of pregnancy is not sufficient. Because a patient is found to be healthy in the early stages of gestation, it does not follow that she will continue to be healthy until the day of parturition. The patient should be made to realize that freedom from untoward happening during one pregnancy does not necessarily mean that subsequent pregnancies will be free from complications. In the recommendations of the New York committee to which previous reference has been made, are several important statements. First of all it is held that some information should be available to the patient as to the standards of prenatal care. The patient should have some knowledge of the purposes of such care and of what she may expect from her attendant as the minimum requirements of a proper prenatal supervision. On the following sentence we would lay particular stress: "She should know that the omission of urinalysis, blood pressure determination, or the measurement of her pelvis constitutes negligence; that a thorough physical examination is a necessary part of proper care". Of the truth of this statement there can be no doubt. At the same time women must understand that the most watchful care cannot always forestall the onset of a metabolic upset. If they know this, they will be the more ready to place themselves under observation so that immediate treatment may be undertaken should an unexpected eventuality arise.



To make antenatal treatment more effective and to make its application more general, the usual remedy must be suggested—the education of the public. In matters obstetrical this is perhaps more difficult than in matters of general hygiene. The responsibility in any case must rest with members of the medical profession and with them alone. Here, as in no other sphere of medicine, can preaching best be achieved by practice. Every woman carefully and successfully guided through a pregnancy, particularly through a difficult pregnancy, is the most effective apostle of the doctrine of adequate antenatal care. Notoriously, women afflicted by bodily ailments confide in one another and every woman pregnant for the first time will seek the advice of another woman. Notoriously also, no medical man is more criticized than the obstetrician. It should be the object of every medical practitioner charged with the care of pregnant women to make every patient an apostle of antenatal care.

### Current Comment.

#### QUININE.

QUININE is still the most important drug in the treatment of malaria. It is remarkable that, although this drug has been used for centuries, so little is known of its absorption and elimination and the mode of its therapeutic action. There has been considerable argument concerning the most effective method of administering quinine. It is generally held that it should be given preferably by the mouth; but it is conceded that there are occasions on which injection is desirable and others on which it is necessary. There is some disagreement as to the relative merits of intravenous and intramuscular injection. Intravenous injection is condemned or disapproved of by some authorities on account of the reaction that may follow it, and on account of the skill and experience necessary for its proper performance. The reaction may be evidenced by rigor, vomiting, diarrhoea or collapse; death may occur. It has been suggested that some at any rate of these symptoms may be due to the sudden release of large quantities of toxin resulting from the rapid destruction of large numbers of malaria parasites; but this view cannot be unreservedly accepted while the knowledge of the action of quinine is so slight. It is not known, for example, whether quinine has a directly lethal action on the parasites or whether it rather supplies

the human organism with the power to resist the infection. The intramuscular injection of quinine has been regarded by some authorities as amounting almost to malpractice. They have based their views mainly on laboratory experiments, in which it has been shown that the injection of quinine into the *gluteus maximus* of a laboratory animal causes necrosis, and that quinine can be recovered from the muscle tissue in greater or smaller quantities at variable periods after the injection. The inference is that quinine is absorbed less rapidly after intramuscular injection than after oral administration. Semple's experiments with washed tetanus spores provided a further source of consternation. Semple showed that tetanus spores free of toxin could be injected into the muscles of rabbits and guinea-pigs without ill-effect; but when fat necrosis was produced in the same animals by subcutaneous injection of quinine, tetanus occurred. These experiments revealed the possibility that so-called idiopathic tetanus might occur as a result of the intramuscular injection of quinine; but surely it is a very remote possibility and one that should hardly deter any but the ultra-cautious or the timid.

It is time that some careful comparative study was made of the effects of the oral, intramuscular and intravenous administration of quinine. In a recent issue of *The Indian Medical Gazette* an attempt has been made to encourage this study by the publication of a series of papers dealing with the absorption of quinine and the quinine treatment of malaria. The first paper is by R. N. Chopra, A. C. Roy and B. M. Das Gupta.<sup>1</sup> These authors conducted a series of experiments to find the concentration of quinine in the blood after intravenous and intramuscular injection, and to compare it with the concentration found after oral administration. They point out that there has been great diversity of opinion concerning the comparative rates of absorption of quinine given orally and parenterally. It has been said by some that absorption after intramuscular injection is slower than after oral administration, by others that half a grain given hypodermically has a more pronounced clinical effect than thirty or forty grains given by the mouth, by others that intravenous injection saves only a short time in the attainment of maximum concentration of quinine in the blood, and so on. Chopra, Roy and Das Gupta employed a modification of Vedder and Masen's method of estimating the quinine content of the blood. They gave injections of quinine acid hydrobromide to monkeys and found that the maximum concentration of quinine in the blood occurred in about fifteen minutes, whether the injection was made intramuscularly or intravenously. At the end of half an hour the concentration began to fall; but it fell more rapidly after intravenous than after intramuscular injection. At the end of two hours the concentration after intravenous injection was considerably lower, and at the end of five hours very much lower than after intramuscular injection. Twenty-four hours after

<sup>1</sup> *The Indian Medical Gazette*, October, 1934.

intravenous injection no quinine could be detected in the blood, whereas in some cases appreciable amounts could be found after intramuscular injection. A comparison was made of the effects of the oral, intramuscular and intravenous administration of quinine to man. The results of the injections were similar to those obtained in the experiments on monkeys; on the whole the maximum concentration of quinine in the blood after oral administration occurred later than after injection. In both series of experiments there was considerable individual variability in the concentration of quinine in the blood at different intervals.

Chopra, Roy and Das Gupta injected 0.02 gramme of quinine acid hydrobromide into the *gluteus maximus* muscles of rabbits weighing 1.8 and 2.0 kilograms respectively. This is a proportionate therapeutic dose. They found that at the end of twenty hours only 0.5 milligramme and 0.06 milligramme respectively remained at and around the site of injection. They believe that the failure of absorption observed by Karamchandani was due to the injection of too large a dose, which caused severe injury to the tissues.

The results of these experiments are important. They suggest that intravenous injection has no advantage over intramuscular, and that intramuscular is actually preferable, because after it the concentration of quinine in the blood falls more slowly; they show that the intramuscular injection of quinine can be relied on as a therapeutic measure when time is precious and when oral administration is impracticable or contraindicated.

The second paper is by R. A. Murphy, who has had many years' experience in the treatment of malaria in Assam.<sup>1</sup> He disagrees with the recent finding of the Malaria Commission of the League of Nations concerning the treatment of malaria by encouraging the development of immunity (see *THE MEDICAL JOURNAL OF AUSTRALIA*, December 2, 1933), and he is accustomed to prescribe a three months' course of treatment. He gives intramuscular injections when quinine cannot be taken orally; but he finds that they are seldom necessary if adrenaline is given to control vomiting.

H. Williamson and Shamsher Singh discuss the treatment of malaria by the oral, intramuscular and intravenous administration of quinine.<sup>1</sup> They stress the value of intramuscular injection of quinine in the treatment of children. They point out that children with malaria fever are apt to be irritable and hard to manage; but after the subsidence of fever they become more rational and can usually be persuaded to take quinine, "Atebrin" or "Plasmo-quine" by mouth. Williamson and Singh have observed no untoward effects of intramuscular injection beyond occasional soreness. For intravenous injection they use a solution of quinine bishydrochloride in 5.0 cubic centimetres of saline solution, to which in some cases they add 0.5 cubic centimetre of pituitrin or 1.0 cubic centimetre of adrenaline solution. The injection is made slowly,

about five minutes being taken on every occasion. They observed a reaction in 30% of their cases; in one case the patient collapsed and died three hours after the injection. They conclude that oral administration of quinine is the method of choice for early treatment and for the treatment of benign tertian malaria without high fever; that the dangers of intramuscular injection have been exaggerated and that this method of treatment is best in severe benign tertian malaria and when oral administration has not had the desired effect; that not more than four intramuscular injections need be given; and that, while intravenous injection is the best treatment for cerebral malaria, its dangers should be realized, and it should not be employed unless the patient can be kept under observation for several hours afterwards.

S. Subrahmanyam recommends intravenous injection of quinine as a routine procedure in the treatment of malaria.<sup>1</sup> He gives an injection of quinine acid hydrochloride dissolved in 10.0 cubic centimetres of water every day for six days. If the blood pressure falls considerably during the injection or if respiratory embarrassment occurs, the procedure is stopped immediately and no further attempt at intravenous therapy is made. Subrahmanyam shows that intravenous injections of quinine can be carried out frequently without any great danger to the patient, providing suitable precautions are taken. At the same time it must be said that his methods are not to be commended.

In the final paper of the series D. Manson discusses intravenous and intramuscular injection of quinine in the treatment of malaria.<sup>1</sup> He gives intramuscular injections when there is persistent vomiting, hyperpyrexia or intense headache. He gives intravenous injections in cerebral malaria, heavy malignant tertian infections and the algid forms of malaria; but he admits that he is doubtful of their advantages over intramuscular injections even in these cases. "The main drawback to the intravenous route is shock following injection." "The sole advantages . . . are the greater rapidity of action and the entire absence of local pain." He points out that collapse may occur as a result of intravenous injection of quinine, however expert the operator. In severe cerebral malaria the added strain of shock may be more than the patient is able to bear.

There is little further comment to make on these papers. The following conclusions might be drawn. Oral administration of quinine is preferable in the vast majority of cases. Much remains to be learned of the intravenous administration of quinine; there can be no doubt that it is not devoid of danger. The dangers of intramuscular injection of quinine have been grossly exaggerated; if sepsis is observed and repeated injections are not made at the same site, abscess or extensive necrosis should never occur. When the choice lies between intravenous and intramuscular injection, preference should be given to the latter.

<sup>1</sup> *The Indian Medical Gazette*, October, 1934.

<sup>1</sup> *The Indian Medical Gazette*, October, 1934.

## THE USE OF ANIMAL CHARCOAL IN INFECTIONS.

RECENT years have seen the introduction of many different forms of what is generally referred to as non-specific therapy. The bright hopes roused by the early successes in immune therapy have not been realized, except in the case of certain infections, where the results have ranged from encouraging to the brilliant. But the finding of the key to fit each lock, to adopt the once popular paraphrase of the Ehrlich doctrine, has not been the lot of modern medicine; even if the sceptical may imagine that the physician today is rather drastic, picking the lock, or even forcing it, the non-specific methods sometimes, if not always, do give very good results.

One of the most recent of these methods is described in an article by E. St. Jacques, wherein he recounts his experiences, both experimental and clinical, with the use of animal charcoal.<sup>1</sup> This suggestion was made by Conklin a year ago, and a large series of animals has been treated in this way with uniformly good results. The author makes little reference to animal experiments in this paper, but presents some figures and a number of case histories. As it is risky to argue from animals to man, it is naturally the results in human patients that interest us. A 2% suspension of animal charcoal of high grade was used, and by cautious empirical trial it was found quite safe to give doses of from three to five cubic centimetres. Over 300 injections were given to over 150 patients without any untoward results being noted. In a few cases there was a rise in temperature following the injection, which was given intravenously, but there were no rigors or symptoms of shock. Out of the first hundred patients the author claims that there were only three who were not benefited, though the series was not in any sense selected, but consisted of the patients admitted consecutively to the Jeanne d'Arc Hospital in Montreal suffering from infective states.

St. Jacques divides his cases into the convincing, the good, and the unconvincing; these numbered 50, 31, and 19 respectively. Acute puerperal infections seemed to give very good results, also the acute gonococcal infections, especially epididymitis, but the best of the series were the cases of furunculosis, which the author regards as so successful that he claims that in its treatment charcoal reigns supreme. The injections were given at two day intervals as a rule, though an intermission of one day only was apparently harmless; as many as eight injections were given in some case. One necessary precaution is that the piston barrel and needle of the syringe should be coated with paraffin to prevent clogging by the particles of charcoal. It would thus appear that this neutral substance can be safely introduced into the human circulation in the prescribed doses, and that it appears to exercise a beneficial effect in cases of infection of various kinds. It must be

remarked, however, that there were no adequate controls presented in this series of cases, without which it is impossible to assess justly the true results of treatment. But nevertheless it would seem worth while to try this method, for it is not so illogical as might appear at first sight. Although the author admits that the exact method of action of the charcoal is a biological secret as yet, still it is known that the carbon particles thus introduced into the circulation of an animal are partly arrested in the spleen, liver and bone marrow, where there is a stimulation of the reticulo-endothelial cells, and with the coincident leucocytosis there is in all probability a stirring-up of the phagocytic and other defensive mechanisms of the body. A full investigation of the effects of this therapeutic agent would be of interest, particularly if its harmlessness and even occasional effectiveness are sustained by further experiences.

## VON GIERKE'S DISEASE.

Two cases of glycogenosis, or glycogen storage disease, have been recently reported in this journal. It is a rare metabolic perversion which was only described by von Gierke in 1929, and is usually recognized by the extraordinary size of the liver. It has been attributed to a disturbance of the normal mechanism by which glycogen is split, and, as might be expected, more or less massive glycogen deposits have been found, not only in the liver, but also in the kidneys and elsewhere. For example, deposits in the brain and spinal cord have been described, and it is possible that some cerebral disturbances of children may be due to the unrecognized operation of this congenital anomaly.

W. Antopol, J. Heilbrunn and L. Tuchman describe a case of enlargement of the heart due to this disease, and it is interesting to read that out of five necropsy records that are available in the literature to date two of them note specially a great diffuse enlargement of the heart.<sup>1</sup> The case was that of a four and a half months old infant of German parentage. This baby had not attracted any special notice since birth, but the mother had observed that he always breathed with unusual rapidity. He was admitted to hospital suffering from pneumonia, from which he died, and though there were definite physical signs of consolidation in the lungs a few days after his admission to hospital, no clear radiological evidence of pulmonary disease was found till a week later. But considerable enlargement of the heart was noted, the shadow of which largely obscured the details of the left lung field in the X ray film. This was confirmed at autopsy, and a photograph reproduced in the article shows the two apparently small lungs with a huge globular heart appended thereto. Evidence of glycogen storage in the organs was found by histological and ordinary analytical methods.

<sup>1</sup> The Canadian Medical Association Journal, August, 1934.

<sup>1</sup> The American Journal of the Medical Sciences, September, 1934.



Discussing the case, the authors remark that the foetal type of glycogen metabolism may possibly persist into post-natal life. This would mean that the glycogen would not be mobilized with readiness and deposits in the viscera might then occur, as occurs in the foetus, and also to such a striking extent in cases of von Gierke's disease. In any case the mechanism of this congenital aberration is obscure, but in the present instance interest centres round the type of disease in which definite cardiac hypertrophy occurs. The huge liver of the classic variety may readily direct attention to this rare complaint if the possibility is borne in mind, but it is suggested that some cases of unexplained cardiac hypertrophy might be due to this cause. The so-called rhabdomyomata of the heart, either circumscribed or diffuse, are known to be rich in glycogen, and possibly might also be associated with an anomaly of glycogen storage. Certainly a careful investigation of similar cases is desirable, for, although the disease in question is a rarity, an understanding of its mechanism might illuminate some of the obscure aspects of carbohydrate metabolism.

## Special Articles on Treatment.

(Contributed by request.)

### XLV.

#### THE TREATMENT OF ERYSIPELAS.

UNDER the name erysipelas is usually connoted the ailment which is characterized by a localized superficial erythema with tense swelling of the affected skin. It was formerly known as Rose, the Rose, or Saint Anthony's fire. It may originate from infection of a wound or other surface breach, or without any such obvious lesion. There are accompanying pyrexia and other constitutional symptoms. Suppuration does not usually occur and pain is not a prominent symptom. The erythema spreads perhaps very extensively from its place of origin. The advancing edge is tense and red. In the rear of this the redness and swelling subside. The face is much more frequently affected than the rest of the body.

Microscopically, in the advancing edge and in the skin immediately outside this, the lymphatics contain abundant streptococci, and there are the usual signs of acute inflammation. The oedema may be so intense as to close the eyes and greatly alter the appearance of the face.

The cause of erysipelas is a hemolytic streptococcus having a close relationship to the streptococci which cause cellulitis, lymphangitis, sore throat, scarlet fever, and puerperal septicemia. These have their clinical individualities, but abundant instances are recorded in which infection from one of these "clinical entities" gave rise to another of the group. In the Milroy Lectures of 1932, on "The Role of the Hemolytic Streptococci in Infective Disease", Okell<sup>1</sup> stresses the "essential unity" of these streptococci, but without suggesting why the clinical manifestations should be in one case erysipelas and in another scarlet fever, with the characteristic differences of these two diseases. He describes the "offensive weapons" of these streptococci as: (i) erythrogenicity, (ii) pyrogenicity, and (iii) invasiveness, that is, the power rapidly to pass the local defences and infect the blood. He states that the two last are the most dangerous weapons and that erythrogenicity, while conspicuous, is not in itself very malignant. The erythrogenic toxin is an exotoxin generated in the culture medium in which the

streptococcus is grown. The antitoxin to this Okell considers as "immunologically identical", whether the toxin producing it has come from the streptococcus of erysipelas, scarlet fever or of any other of this group of diseases. This antitoxin antagonizes the erythrogenic toxin only and not the pyrogenic and invasive weapons, against which no antitoxin has yet been obtained. This explains why the best results of antitoxin treatment are obtained when it is used early in the illness. At this stage the exotoxin only is producing the clinical effects. Later, when the pyrogenic and invasive weapons are causing suppuration and septicaemia, little benefit is obtained from its use.

In regard to infectiousness, experience in the past showed that erysipelas could readily be transmitted from one patient to another, and not only by direct contact, but through the medium of infected articles. Hospital conditions in pre-antiseptic days gave ample opportunity for this. Fehleisen<sup>2</sup> describes how a patient was purposely infected (as treatment for lymphosarcoma) by being put into a certain bed in the hospital "in which patients with open wounds usually became attacked by erysipelas". And Fagge<sup>3</sup> mentions a hospital epidemic of erysipelas which was traced to the cushion of the operating table. Soaking of the cushion in water produced a brownish solution, and a rabbit injected with some of this developed an affection closely resembling erysipelas. Under modern nursing conditions the infectiousness is easily controlled and erysipelas patients may be safely nursed in a general ward, that is, not isolated from other patients. At the Coast Hospital, Sydney, in the twenty-five years 1909 to 1933,<sup>4</sup> over 2,000 cases of erysipelas were so dealt with, and instances of other cases occurring in the same ward were so rare as to prove that this was a safe procedure—safe because of careful aseptic nursing. It is the man behind the gun, or rather, the nurse behind the sterilizer, that insures safety.

Most cases of erysipelas end by crisis about seven days after the onset. The temperature falls to normal and the rash disappears. Severe cases, in which pyrogenic and invasive complications occur, may last for weeks. The prognosis in these cases and in infants, old persons and alcoholics generally is not so good. Facial erysipelas has a lower death rate than erysipelas of the rest of the body. This is partly explained by the high rate in erysipelas neonatorum, which usually affects the umbilicus and abdomen. There is a liability to relapse, even some weeks after a temporary subsidence. The streptococci appear to lurk in the affected region. A remarkable instance of this was the lighting up of typical erysipelas of the forearm of a young man when his fingers were moved under anaesthetic for stiffness following cellulitis of the hand six weeks previously.

#### Constitutional Treatment.

Constitutional treatment by appropriate diet and tonics is often required. In the past great value was attached to perchloride of iron, liquor or tincture, and with this quinine was often combined. Other treatment usually comprises one or more of the following: local application of ointment or other dressing, Röntgen rays, ultra-violet rays, antitoxin.

#### Local Application.

For local application ichthylol 10% in vaseline is perhaps the most commonly used. It is spread over the whole affected area and for about 3-75 centimetres (one and a half inches) outside the advancing edge of the inflammation. This is kept continuously covered with lint. On the face this forms a mask with openings for eyes, nose and mouth. Instead of ichthylol, magnesium sulphate and glycerine may be used, applied in the same way. A usual formula is *Magnesi Sulphatis Essiccatis*, 720 grammes (twenty-four ounces), to *Glycerini*, 330 cubic centimetres (eleven ounces), worked into a paste. Attempts are often made to check the advancing inflammation by strapping, collodion, iodine, silver nitrate, or by local injections of carbolic acid or of other antiseptic. With such local treatment, mostly by ichthylol or magnesium sulphate mask, the mortality has been: At the Coast Hospital, Sydney,<sup>4</sup> in twenty-five years, 1909-1933, 2,222 cases; mortality,

7.06%; at Bellevue Hospital, New York,<sup>(6)</sup> in twenty-three years, 15,277 cases; mortality, 10.1%.

#### Röntgen Irradiation and Ultra-Violet Irradiation.

Ude and Platon,<sup>(6)</sup> of Minneapolis, reported on 402 cases treated in the contagious department of the Minneapolis General Hospital. Grouped according to treatment, the results were as follows:

1. Magnesium sulphate and glycerine pack in 1922, 1923, 1925: Cases, 151; mortality, 18%.
2. Röntgen irradiation in 1926-1928: Cases, 113; mortality, 12.4%.
3. Ultra-violet irradiation in 1928-1929: Cases, 79; mortality, 6.3%.
4. Antitoxin (they note that these were mild cases): Cases, 12; mortality, nil.
5. Number 2 plus number 4: Cases, 26; mortality, 15.4%.
6. Number 3 plus number 4: Cases, 21; mortality, 23.8%.

They consider that either Röntgen or ultra-violet irradiation lowers the death rate and reduces the duration of the disease. They prefer ultra-violet irradiation because: (a) it is more readily available in all communities and is devoid of danger, (b) it usually requires only one treatment, (c) it is inexpensive, and (d) it gives better results. They use a quartz mercury vapour lamp at 20 centimetres (eight inches) distance from the patient, and the exposure time is approximately twice that required to produce mild erythema on normal skin.

J. M. Davidson,<sup>(7)</sup> of Edinburgh, treated by ultra-violet irradiation 51 patients of all ages from seven months to seventy-four years. He did not include any subacute infection with no pyrexia or other constitutional disturbance. All patients except infants were exposed for five minutes with the arc at a fixed distance of 30 centimetres (twelve inches). For infants a slightly shorter exposure was used. The inflamed area and the adjacent healthy skin for about 3.75 centimetres (one and a half inches) were included in the exposure. In facial cases the eyeballs were protected by pads of cotton wool. After treatment the part was left uncovered or at most was covered with wet lint. He recommends this treatment as giving better results than other methods and as being easily applied, usually available, safe, clean and inexpensive.

C. R. Morton,<sup>(8)</sup> of Newcastle Hospital, New South Wales, has recently recorded five cases successfully treated by ultra-violet irradiation. In three of these an upper limb was affected; there was lymphangitis, and one patient had a teno-synovitis of the palm. The other two were facial infections, one severe. All cleared up rapidly, within seven days of the commencement of treatment.

#### Antitoxin.

In the making of antistreptococcus serum, whether for use in erysipelas, scarlet fever or puerperal septicæmia, the horse is injected with culture filtrate only (that is, toxin), or with toxin and live cultures. When live cultures have been used the product is generally described by the maker as "antibacterial" and "antitoxic". For scarlet fever, *Streptococcus scarlatinae* is used; for erysipelas, *Streptococcus erysipelatis*; for puerperal septicæmia, several strains which have been isolated from this disease. A so-called polyvalent antistreptococcus serum is made with many strains of pathogenic streptococci, both hemolytic and non-hemolytic. There has been much discussion as to the specificity of these several toxins and antitoxins.

Fleming and Petrie,<sup>(9)</sup> in their recently published work, write (page 73):

In the United States most investigators favour the view that the various streptococcal toxins are strictly specific. On the other hand, research in Great Britain indicates that the toxins are closely related to each other and that they are perhaps identical, the only difference, if it exists, being a quantitative and not a qualitative one; the scarlet fever streptococcus is believed to be the most actively toxigenic member of the group.

They quote clinical reports as supporting the theory of a common toxin or of a group of toxins with a "consider-

able degree of antigenic overlapping". The polyvalent serum they damn with very faint praise as "occasionally efficacious" but mostly disappointing, and add that since January, 1930, the Council on Pharmacy and Chemistry in the United States has omitted this serum from its list of approved remedies.

Reports on the treatment of erysipelas with antitoxin have been published in America and in England. Birkhaug,<sup>(10)</sup> in sixty cases, "moderately severe", treated with serum prepared from streptococci of erysipelas, found "very marked curative properties". Unconcentrated serum, 100 cubic centimetres, or concentrated, 15 to 20 cubic centimetres, given during the first three days of the attack was followed by prompt improvement of the toxic symptoms and subsidence of the erythema and oedema.

Symmers and Lewis<sup>(11)</sup> in 1927 reported 131 cases so treated at the Bellevue Hospital, New York: facial erysipelas 111 with 5 deaths, and erysipelas of the body 20 with 2 deaths.

In 1928 Symmers<sup>(12)</sup> reported on 1,226 cases at the same hospital: treated without antitoxin, 581 with 64 deaths, mortality 11%; with antitoxin, 645 with 40 deaths, mortality 6.2%.

McCann,<sup>(13)</sup> of Rochester, New York, reports on 115 attacks of erysipelas treated at Rochester Municipal Hospital in the period January, 1925, to May, 1928. Adults numbered 96 and children 19. Of these, 10 adults and 10 children died. The treatment used was:

1. Erysipelas serum—  
Adults, 54, with 6 deaths (11.1%).  
Children, 15, with 8 deaths (53.4%).
2. Scarlet fever serum—  
Adults, 21, no deaths.  
Children, 2, with 2 deaths.
3. No serum—  
Adults, 23, with 4 deaths (17%).  
Children, 2, no deaths.

He comments that there are many factors to be considered in estimating the efficacy of any treatment of erysipelas, such as season, age of patient, variation in epidemic severity, distribution and extent of body lesions, and perhaps geographic differences in severity. His conclusions are that previously reported favourable results of serum treatment were inadequately controlled. He holds that his series, while not proving that the serum is of no value, compare most unfavourably with the results in the eleven years previous to the introduction of serum treatment. He adds that if erysipelas serum is of value, this series indicates that a scarlet fever antitoxin is likewise of value in the treatment of erysipelas.

Benson,<sup>(14)</sup> Medical Superintendent of the City Hospital, Edinburgh, in 1932 reported on 200 serum-treated cases of erysipelas. Both erysipelas serum and scarlet fever serum had been used freely during five years, but the results had not been encouraging. The spread of the local process had not been checked. The constitutional symptoms had been alleviated in some cases.

#### Conclusion.

The severity of erysipelas varies very much, the factors involved being age and constitution (for example, alcoholism) of the patient, the region and extent of the body involved, the season of the year, and the virulence of the infection. Most patients will recover rapidly with local treatment only. But recovery is materially assisted and the duration of the attack shortened by the use of these newer remedies, antitoxin and ultra-violet irradiation. And it may be that scarlet fever antitoxin will be found more efficacious than erysipelas antitoxin.

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<sup>(16)</sup> K. E. Birkhaug: "Erysipelas. Observations on the Etiology and Treatment with Erysipelas Antistreptococcic Serum", *The Journal of the American Medical Association*, May 8, 1926, page 1411.

<sup>(17)</sup> D. Symmers: "Antitoxin Treatment of Erysipelas: Results in 705 Cases at Bellevue Hospital", *The Journal of the American Medical Association*, August 25, 1928, page 535.

<sup>(18)</sup> McCann: *The Journal of the American Medical Association*, July 14, 1928, page 78.

<sup>(19)</sup> T. W. Benson: *The British Medical Journal*, April 30, 1932, page 797.

## British Medical Association News.

### SCIENTIFIC.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at Sydney Hospital on October 18, 1934. The meeting took the form of a series of clinical demonstrations by the members of the honorary staff. Parts of this report appeared in the issues of December 8 and 22, 1934.

#### Orthopaedic Conditions.

A demonstration was given in the Orthopaedic Department by DR. JOHN HOETS and DR. R. V. GRAHAM.

##### Apparatus.

In the plaster room a demonstration of plaster and celluloid work in its various stages was given.

A demonstration of occupational therapy was given. Several patients were at work under the supervision of Miss Barker, Honorary Occupational Therapist. Several articles made by patients were shown.

A short-wave "fever" machine lent to Sydney Hospital from Electrical Units, Limited, Sydney, was shown. The thermo-ray unit is a combination of various machines at present in use in Europe and America. It is entirely built in Australia and consists of a special output, control and treatment table, and a transmitting unit transmitting the wireless waves to the treatment table. The special features of the unit are the great ease and comfortable manipulation of the electrodes and the wide range of controllable frequencies, from 16 to 56 megacycles.

##### Pott's Disease with Cord Symptoms.

A boy, aged fourteen years, had been admitted to hospital with a history of increasing weakness of limbs for the previous nine months. He was born in Palestine. At two and a half years of age he came to Australia and was treated soon afterwards for spinal caries. He was in hospital for some months and subsequently enjoyed good health until the present trouble started nine months ago. On examination there was an angular curvature of the upper dorsal region. Knee and ankle clonus was present on both sides and a Babinski reflex was present on the right, the left plantar reflex being indefinite. X ray examination showed that the fourth and fifth dorsal vertebrae were affected to such an extent that the bodies had almost completely disappeared, all that remained of the two being a small bony mass less than half the size of one normal body. The tuberculous process was apparently arrested, but angulation in consequence of the collapse was so marked that the body of the third vertebra rested on the body of the sixth, producing a right-angled deformity.

Recumbency with the use of a sandbag under the kyphos and with weight extension applied to the head had been tried for a month with some amelioration of symptoms. The question of laminectomy had been raised and Dr. Holmes & Court had advised in favour of operation.

DR. C. E. CORLETTE thought laminectomy would not benefit the cord condition, but a fixation by Albee graft might be worth while to prevent further collapse.

DR. H. A. SWEETAPPLE advocated prolonged recumbency over a period of nine to twelve months on a frame.

#### Thrombo-Angiitis Obliterans.

A male patient, aged forty-eight years, had a left lumbar ramisection performed five years ago to improve the circulation in the left lower limb, as the foot showed effects of diminished circulation. This proved unsuccessful and a below-knee amputation had been carried out. Pathological examination of the vessels of the amputated part revealed changes typical of Buerger's disease. The right lower limb was also affected, and two years ago right lumbar ramisection was performed with better results than on the left side. The circulation in the limb was improved and the patches of threatened gangrene cleared up. The patient had a very difficult time financially during the winter just passed, and presented himself a month ago with an indolent infected ulcer on the medial aspect of the great toe joint, about the size of a florin. He was admitted to hospital and the foot was placed under a bed cradle, from which was slung a light on a flex, constant warmth being given. The ulcer began to heal, and at the time of showing was almost completely healed.

An interesting feature of the case was the fact that, although the two operations for ramisection had been performed by different surgeons, each had been followed by an incisional hernia. The first had been repaired, but had recurred. No further attempts to repair the hernia were considered advisable.

#### Traumatic Arthritis of the Knee.

A man, aged thirty-five years, some twelve years previously had received an injury to the right knee at football. This had been always troublesome. He came under observation three months before the meeting. The knee at that time was painful and swollen. No redness or heat was noted. The swelling did not appear to be due to fluid. X ray examination revealed no abnormality. No other joints were affected. Under ether anaesthesia an exploratory incision was made into the joint. The synovial membrane was found uniformly and very greatly thickened, the articular cartilage appeared healthy, and no other abnormality was detected. Portions of the synovia were removed for examination by section, culture and guinea-pig inoculation. These all failed to reveal any infective condition and indicated reactionary hyperplasia. Following the exploration the knee improved clinically and it was intended to carry out synovectomy.

#### Congenital Dislocation of the Hip, Talipes, Adiposity.

A girl, aged fifteen years, twelve months ago weighed 129.1 kilograms (twenty stone seven pounds). Her weight, together with congenital dislocation of the hip and talipes, rendered her very unwieldy. Under treatment she had steadily improved and was now just 107.1 kilograms (seventeen stone) and feeling very much better. Treatment consisted in regulation of diet to a certain extent, which presented some difficulties, as her appetite was good, and the administration of "Lipolysin".

#### Fracture of the Neck of the Femur.

A woman, aged sixty-seven years, had sustained a fracture of the neck of the right femur two years previously. Radiographs taken in January, 1934, showed no evidence of union, there being an absorption of the neck and upward displacement of the trochanter. They also showed very pronounced decalcification of the upper end of the femur. The hip joint was reconstructed by removing the head of the femur after separating the great trochanter with its attached muscles. The upper aspect of the neck was then rounded off and inserted into the acetabulum.



and the trochanter was fixed to the shaft of the femur at a lower level. A radiograph taken in August, 1934, showed pronounced recalcification of the femur since the resumption of activity. The patient was now able to walk with a slight limp and had about two-thirds of the normal range of abduction and about the same degree of flexion and extension.

#### Radio-Sensitive Tumour of the Pharynx.

Dr. D. G. CARRUTHERS showed a woman whom he had first seen in March, 1934. She had had left facial and orbital pains for about ten weeks, and diplopia. Examination had revealed left external rectus paralysis and hyperaesthesia of the ophthalmic and maxillary divisions of the left fifth nerve. There had been a left otorrhoea six months previously, and at first a possible Gradenigo syndrome was suspected. The middle ear, however, was found to be healed and the petrous tip was normal at X ray examination. Examination of the naso-pharynx revealed a hard tumour mass occupying the vault, the posterior wall and the left lateral wall down to the soft palate, which was considerably restricted in movement on the left side. Further X ray examination showed the tumour pressing the pharyngeal tube forward and invading the cranial base. Biopsy was thought inadvisable. The patient had a full course of deep X ray treatment and the tumour had disappeared, the pains were much less, but the left external rectus muscle had not recovered. Dr. Carruthers said that it could now be concluded that the tumour was one of a highly radio-sensitive type, which arose in those parts, such as the lympho-endothelioma or Ewing's sarcoma. Obviously further observation was still necessary.

#### Malignant Disease of the Ethmoid.

Dr. Carruthers also showed a male patient, aged fifty-five years, who had been seen in November, 1933, in consultation with an ophthalmic surgeon on account of left optic neuritis. It was suspected that there might be an underlying sinusitis in the nose. Clinical examination revealed no abnormality, but X ray examination revealed all the sinuses as dull. Operation was carried out upon all the sinuses, when it was found that the dullness in the skiagrams was due to great bony thickening. The sinuses appeared otherwise healthy. For two weeks after these operations the vision improved, but soon failed again. The left ethmoid was then further explored, and from one of the posterior cells a large polypus was removed. It was then thought that the cause had been found. It had, but not in the form expected. After this operation the vision failed entirely and a left proptosis of the eye occurred; also a chain of hard glands had appeared in the neck. It now appeared obvious that the condition was a cancer arising in the posterior ethmoid region. A long course of deep X ray treatment had been given, but without appreciable results. The eye was now blind, there was a stationary proptosis, the tissues of the pharynx were becoming infiltrated and the buccal mucosa was oedematous. The left temporo-mandibular joint was slowly dislocating outwards and the teeth were being carried out of alignment.

The case was contrasted with the previous one as an instance of non-response to deep X ray therapy. It had not been possible to prove the nature of the growth, but it was probably an epithelioma or a true carcinoma arising from the ethmoid mucosa. The patient was shown on account of the comparative rarity of the site of growth and to contrast what appeared to be an X ray-resistant tumour with the previous case, which had exhibited such great sensitiveness to the X rays.

#### Deafness.

Dr. Carruthers's last patient was a man, aged forty-six years, who had suffered a war injury which had rendered his left ear almost totally deaf. A subsequent right suppurative otitis media had caused him to be afflicted with deafness. It was found possible to render this right ear dry with treatment. There then remained deafness which the patient was at times able to overcome by the manipulation of a plug of wool into some position in the ear. This,

however, caused inflammation at times, and efforts were then made to find out why he heard with the plug of wool and to see whether in some way this effect could be imitated. It was found that best results were obtained in this case by an artificial closure of the hole in the tympanum, this being effected by placing an appropriately shaped piece of gummed parchment over the perforation and allowing it to adhere there. The patient then regained quite useful hearing, an audiogram being shown to demonstrate the degree of improvement, which was seen to be throughout the whole tone range.

By contrast, an audiogram was also shown of a patient with an apparently similar lesion, but in whom no improvement in hearing could be produced. Why one patient should benefit from a method which was without effect in another was not clear, except that in the latter there was probably some fibrotic thickening about the minute ossicular joints or at the inner tympanic windows. The complexity of the problem of deafness was thereby stressed, with the suggestion that with time deafness would, like paucity of vision, come to be classified into many types, each with its appropriate method of remedy.

#### The Western Electric Audiometer.

In addition, the Western Electric audiometer was demonstrated with a series of graphs showing the use of the instrument: (i) as a means of demonstrating the type and degree of deafness; (ii) for the purpose of recording the progress under treatment; (iii) as a means of accurately assessing loss in claims for compensation; (iv) as a method, along with labyrinthine testing, of demonstrating the true state of the eighth nerve in cerebral lesions.

#### Skiagrams.

Dr. J. G. EDWARDS displayed a series of interesting skiagrams. Among these were three skiagrams showing a dental reamer in a lower lobe bronchus. This was later coughed up and swallowed and eventually was passed by the bowel.

A series of duodenal diverticula, affecting the cap and the second part of the duodenum, was also displayed.

Another rare condition was seen in a skiagram showing two ulcer craters of the lesser curvature of the stomach.

Other interesting conditions shown were enchondroma of a phalanx, vertebral tuberculosis, hydropneumothorax, loose body in the elbow joint, and an appendix situated under the right rib margin.

Dr. D. G. MAITLAND demonstrated a series of X ray films of general interest, amongst which were cases illustrating biliary calculi rendered visible by cholecystography, a series of gastric ulcers, a calcified hydatid cyst displacing the heart, a double carcinoma of the colon, an osteoma of the frontal bone, a foreign body in the oesophagus, and a stricture of Stenson's duct demonstrated by lipiodol injection.

#### Deep X Ray Therapy.

Dr. A. T. NISBET showed several patients to illustrate the effects of deep X ray therapy.

The first patient was a woman, aged twenty-three years, who, in August, 1933, fell, slightly injuring her left leg. A short while afterwards she noticed pains in the thigh. In October, 1933, the pains became more severe and frequent; in November the pain became continuous. A swelling appeared at the end of October and grew gradually until November. On January 30, 1934, biopsy revealed an osteogenic sarcoma of high grade malignancy. The patient was first seen at Sydney Hospital during the second week of February. There was then an incision on the lateral side of the thigh, just above the knee joint, and a mass of reddish tissue, actively growing, was protruding through the wound for about two centimetres. Deep X radiation was commenced immediately, the lower third of the femur being irradiated through four ports of entry. The actual dose given to each of the four fields was 1,800 international r units through three millimetres of copper and two millimetres of aluminium at 225 kilovolts. In April a further dose of 1,800 r to each of two fields was administered, and in August the same amount was applied

with a kilovoltage of 275. Dr. Nisbet pointed out that the present condition of the patient was that the fungations had disappeared, the biopsy wound was healed and there was slight limitation as regards full extension of the knee joint. Skiagrams showed that some new healthy bone had been laid down and there was no apparent extension of the growth. X ray examination of the thorax showed no evidence of metastatic invasion. The patient had returned to her duties as a secretary. This case, with a pathological report of high grade malignant osteogenic sarcoma fungating through a biopsy wound, was the only case of its type that in Dr. Nisbet's experience had definitely reacted to the extent that the malignant outgrowth had disappeared and in which the patient was apparently in a better state of health nine months after commencement of treatment. This condition was attributed to X radiation being highly filtered and of increased voltage.

Dr. Nisbet's second patient was a man, aged fifty-three years. In October, 1933, this patient had been gradually losing the use of his right arm for eighteen months. He had had pain from the elbow to the shoulder for twelve months and had noticed swelling over the right shoulder joint for the last three months. He had an injury to the right upper arm in 1931; X ray examination three days after the injury revealed no bone abnormality. X ray examination of the right shoulder joint in November, 1933, showed that the head of the humerus had grown into an enormous bony mass measuring 9.0 by 7.0 centimetres. The edges of this tumour were very irregular and in places spicules of bone could be seen projecting outwards into the soft tissue. Diagnosis of osteogenic sarcoma was made. Deep X ray therapy was commenced in November, 1933, to the anterior and posterior aspects of the head of the humerus. In January, 1934, further radiographs were taken and it was found that the growth was spreading down the humeral shaft. Further deep X radiation was given to this region. In April and July, 1934, similar courses of treatment were applied. In all the total dose, measured in international r units through three millimetres of copper and two millimetres of aluminium, amounted to 13,000 r. The present condition, as shown by radiographic examination, was that there was a large amount of sclerosis of the head and shaft of the humerus, the main tumour had decreased in size by about two centimetres in breadth, and there was bony ankylosis of the shoulder joint. The patient had not lost a day's work in eleven months and there was no evidence of any metastatic deposit in the pulmonary tissue.

Dr. Nisbet also showed a man, aged fifty-four years. In January, 1934, the patient's left jaw was broken by being kicked by a horse. Next day a tooth was extracted and shortly afterwards a swelling appeared over the left jawbone. In April, 1934, more teeth were extracted and part of the bone was taken away, during which time the swelling had been increasing gradually. The X ray department reported osteogenic or medullary sarcoma of the whole of the left anterior ramus. On examination a large, hard, bony mass was felt extending both laterally and medially from the left jaw. There was difficulty in opening the mouth. In July X radiation was commenced. In September the man reported again, when the condition was thought to be operable, and the patient returned to Dr. McIntosh. However, operation was refused and a further course of deep X ray therapy was given to both sides of the jaw. Dr. Nisbet pointed out that at present the tumour was less than half the size, and full movement could be obtained at the temporo-mandibular joint. Skiagrams of the mandible showed that the bony tumour was smaller in size and sclerosis was taking place. The patient was performing his usual work.

Dr. Nisbet also showed a woman, aged twenty-one years. During 1931 this patient noticed a dull backache; it hurt her to lie on her back. One year later the pain became more severe. In April, 1932, the twelfth right rib was removed and found to be sarcomatous. The pathological report was Ewing's sarcoma. The patient later experienced pain over the twelfth left rib and had two courses of deep X ray therapy to this region (August and December,

1933). Dr. Nisbet said that this patient had been kept under observation since treatment. No secondary deposits had been found. Her weight had been stationary and she had been leading an ordinary normal life.

Dr. Nisbet's last patient, aged fifteen years, sustained a fracture of the finger in February, 1933. Shortly afterwards a small tumour appeared at the injured area and gradually increased in size. It was removed by surgical operation in January, 1934, and the tumour was found to be an osteochondroma. Deep X ray therapy was given, 1,000 r to the palmar and dorsal aspects of the first phalanx of the right index finger. X ray films taken of the finger during the last month showed that new bone formation had taken place where the bone was curetted. There was full movement of the digit and to all intents and purposes the finger was normal.

#### Pulmonary Tuberculosis.

Dr. E. H. STOKES showed a female patient, aged twenty-five years, who was first seen on April 24, 1933. She complained of a persistent cough. She had been treated for some time in a sanatorium. Physical examination disclosed the presence of crepitations at the apex of the right lung. Tubercle bacilli were present in the sputum, the average number found in each microscopic field being seven. The blood sedimentation rate was fourteen millimetres in one hour. X ray examination revealed a tuberculous lesion, recent and active, in the right subapical region. Artificial pneumothorax was induced in May, 1933. The report on a skiagram taken on September 20, 1934, was as follows: "The right lung is fairly well collapsed, except towards the base, where it appears to be adherent." The patient had shown considerable improvement with the treatment.

Dr. Stokes also showed a female patient, aged twenty-four years, who was first seen on February 9, 1933. She was found by Dr. J. Parkes Findlay to be suffering from tuberculous laryngitis. She complained of hoarseness and sore throat of two months' duration. She had lost weight. On examination it was seen that she was tall and thin. Her chest was flat. Crepitations were heard in the left axillary region. The X ray report was as follows: "Advanced tuberculous lesion in the left lung, most marked in the subapical region, where there appears to be some cavity formation. The lesion appears to be fairly recent and active. There is slight, yet definite, involvement of the left lung external to the hilum." Dr. Stokes said that artificial pneumothorax had been induced in February, 1933. Her weight had increased from 43.2 kilograms (six stone twelve pounds) on February 9, 1933, to 49.5 kilograms (seven stone twelve pounds) on October 18, 1934. Her general condition was good, but the later skiagrams showed tuberculous infiltration of the apex of the right lung.

Dr. Stokes's third patient was a young man, aged seventeen years, who had first been seen on July 20, 1933, complaining of a cough with much sputum. Crepitations were heard in both subapical regions. X ray examination revealed "infiltration throughout the left lung with pleural thickening and apical pneumothorax suggesting pulmonary tuberculosis". The sputum contained tubercle bacilli. The blood sedimentation rate was 52 millimetres in one hour. Artificial pneumothorax was induced on the left side in August, 1933, and maintained until about the end of that year. On June 11, 1934, the patient received an injection of "Solaganol B", 0.05 gramme. The last injection of "Solaganol B", 0.25 gramme, was given on October 8, 1934. The patient had shown improvement while under treatment.

Dr. Stokes's next patient was a woman, aged twenty-seven years, who had had an artificial pneumothorax induced in September, 1929, for pulmonary tuberculosis affecting the middle lobe of the right lung. The pneumothorax was maintained until March, 1932. Her general condition had remained good since. In August, 1934, however, it became necessary to terminate a six weeks' pregnancy. She has been receiving tuberculin injections for the last month.

Dr. Stokes also showed a woman, aged thirty-one years, who had first been seen on August 9, 1934, complaining of

dispepsia. On examination it was noted that the chest was flattened. Bronchial breathing was found at the apex of the right lung. One of her sisters had died of pulmonary tuberculosis. The sputum did not contain any tubercle bacilli. The blood sedimentation rate was 42 millimetres in one hour. A report on the skiagram of the chest was as follows: "Mottling in each upper lobe, suggesting active bilateral pulmonary tuberculosis." She had been receiving injections of tuberculin for the last six weeks.

Dr. Stokes's last patient with pulmonary tuberculosis was a man, aged twenty-six years, who had first been seen on January 29, 1934, and who complained of the loss of 9.45 kilograms (one and a half stone) in weight during the last two years. The X ray report of a skiagram of the chest was as follows: "Tuberculous infiltration of both upper lobes of the right middle lobe. The lesion is of a chronic type." Tubercle bacilli had been found in the sputum. The blood sedimentation rate was 13 millimetres in one hour. He had been receiving injections of tuberculin during the last seven weeks.

#### Endothelioma of the Pleura.

Dr. Stokes also showed a man, aged sixty-seven years, who had been shown at previous meetings. He had received deep X ray therapy for a condition which was considered to be an endothelioma of the right pleura. The mass in the right side of the chest had decreased considerably in size and his weight had increased by over 6.3 kilograms (a stone) during the last two years.

#### Splenomegaly.

Dr. Stokes also showed a woman, aged twenty years, who had come to the hospital complaining of cough. It was found that the spleen was enlarged. Double salpingectomy had been performed in Sydney Hospital a year before. The blood count gave the following result:

Red cells, per cubic millimetre .. ..	5,010,000
Hæmoglobin value .. ..	90%
(12.5 grammes of hæmoglobin per centum.)	
Colour index .. ..	0.9
Leucocytes, per cubic millimetre .. ..	6,080

The red cells appeared normal, the white cells were mature. Her blood serum gave a positive reaction to the Wassermann test. It was proposed to give her a course of antisyphilitic treatment.

#### Hydatid Cyst of the Spleen.

The next patient shown by Dr. Stokes was a woman, aged fifty-one years, who had known for some fifteen years that her spleen was enlarged. She complained of amenorrhoea and of something moving in the abdomen and she thought that she might be pregnant. Examination by one of the honorary gynaecologists failed to confirm this suspicion. The spleen appeared considerably enlarged, the lower pole being lower than the level of the umbilicus.

A full blood count gave the following result:

Red cells, per cubic millimetre .. ..	5,090,000
Hæmoglobin value (Haldane) .. ..	88%
(12.24 grammes of hæmoglobin per centum.)	
Colour index .. ..	0.87
Leucocytes, per cubic millimetre .. ..	8,760
Polymorphonuclear cells .. ..	78%
Eosinophile cells .. ..	1%
Lymphocytes .. ..	19%
Monocytes .. ..	2%

The red cells showed some irregularity in size. They were full of hæmoglobin. No macrocytes and no microcytes were seen. An occasional cell showed polychromatic staining.

The patient's blood serum failed to react to the Wassermann test. A Casoni reaction was positive and the complement deviation (hydatid antigen) test gave a weak, incomplete positive reaction, and the precipitin (hydatid antigen) test gave a positive reaction. The diagnosis of hydatid cyst was confirmed by operation at a later date.

#### Morvan's Disease.

Dr. Stokes also showed a woman, aged forty-four years, who had first been seen on July 23, 1934, and who complained that every cut on her hands and feet became septic. She also stated that she burnt her hands and feet and did not feel the burns. There was loss of painful and thermal sensation over the hands and feet, but tactile sensibility was present. The blood serum failed to react to the Wassermann test.

#### Aneurysm of the Abdominal Aorta.

Dr. Stokes's last patient was a man, aged fifty-four years. A mass was noted in the right side of this man's abdomen about two years ago. It was the size of a large orange and was pulsatile. His blood serum failed to react to the Wassermann test. The diagnosis of aneurysm of the abdominal aorta had been confirmed at laparotomy.

#### NOTICE.

THE Medical Secretary of the New South Wales Branch of the British Medical Association announces that the following books have been added to the library of the Branch: "Handbook of Therapeutics", Second Edition, D. Campbell; "Exploring the Unconscious", G. Grodeck; "Pulmonary Tuberculosis in General Practice", A. Morland; "Clinical Toxicology", E. Leschke; "Handbook of Filterable Viruses", R. W. Fairbrother; "Medical Electricity for Massage Students", H. Morris; "Diseases of the Eye", Seventh Edition, J. H. Parsons; "Modern Treatment in General Practice", C. P. G. Wakeley; "The Dermatogoses or Occupational Affections of the Skin", R. Prosser White; "The Science of Radiology", O. Glasser; "Clinical Investigation of Cardiovascular Function", V. Pachon and R. Fabre; "Annals of Roentgenology", Volume XV, "Nasal Accessory Sinuses", F. M. Law.

#### Correspondence.

##### THE OLD MAN: A FANTASY FROM REAL LIFE.

SIR: At the meeting point of two of Melbourne's thoroughfares stands a man nearly all day and every day, dressed always in a long overcoat, green with age, and a shabby bowler hat.

He paces slowly up and down a narrow beat, or stands, his hands sunk deep in his pockets or clasped behind his back, his eyes looking straight ahead or glancing up and down the street, as if seeking some long-expected visitant.

His hair and short moustache are iron grey. His face, with features finely cut and deep lined with suffering or sorrow, is grey also in its sombreness. In his expression there is no bitterness and no ferocity, but rather a taciturnity and quiet reserve—none of the weak and broken lines of hopelessness and yet none of the fire of joyous, rapt expectancy. Resignation is there and a sure resolve, as though he waits some happening, certain but far off.

One feels that to question him would be an intrusion, an impertinence, possibly a sacrilege; that his answer would be inscrutable, even resentful.

He seldom changes his attitude and never his attire, even in the hottest weather. He seldom or never speaks, though he is often surrounded by waiting taxi-drivers. None knows his business or why he stands there, day after day, year after year. The taximen say he is a harmless crank. I wonder!

Is he a sentry doing duty for his natural life in expiation of some broken trust? Is his a clouded mind seeking consolation in a long vigil in the outposts of a battle-front which may have had reality but is now a fantasy, breasting against the imagined hosts of some opposing foe, forever held at bay by his own constancy? If so, he is loyal indeed—never flinching, never wavering, and never asking for relief.



In the blazing heat of summer, when the tar blisters at his feet, he stands in full marching order, greatcoat and all, without complaint. In the winter, when all else seek shelter, he stands with the rain beating over his shoulders, thankful, it seems, to suffer the most acute discomfort so that he may remain at his chosen post.

Is he a lover who, in his moment of highest exaltation, garnered some sprinkling of that soft sweet manna of eternity which is love; failed to gather it truly to his bosom, and henceforth stands with bent head waiting for the weary years to swing that priceless point of time back full circle; listening for the long remembered steps of his lost love, and looking down the arches of the years for her dear form swaying with grace and gentlest consolation—the past forgiven and the future sure?

Is he a father, from whom some prodigal, loved too well, has failed to claim that last material sanctuary? Has he a faith that love alone will mend the shame of broken trust and heal the sorrows of ingratitude? Does he leave his vantage point of waiting only to pray that time and tide will yield their remorseless sway and bring the wanderer home?

Who knows? But in his steadfast poise he tempts the very stars to change their constancy; sure of his mark when all else seems uncertain; contemptuous of earthly things, and allied with heaven in infinite patience and quiet expectancy.

Whatever his vision is, he serves it truly. A faultless certainty holds him to his post while we uncertain mortals, glorying in our supposed freedom of the will, drift by like autumn leaves driven by the eddying winds of chance, fruitlessly sane and sanely passionless. Our faces bear the stamp of trivial haste, fear for the next meal or torpor from the last; concerned with all the flimsy tapestry of earth, tinsel to the touch and falling into dust. Our ears are filled with clanging bells and screech of worthless speed; rushing from one drab interview to uninspired next; never arriving and seldom even hoping to arrive. The sickly mask of sanity can scarcely hide our insane haste.

Serene amid this turmoil, stands our cranky friend.  
"Though this be madness, yet there's method in it!"

Yours, etc.,

Undated.

"THOMAS HYDE."

#### ROYAL AUSTRALASIAN COLLEGE OF SURGEONS AND THE MORTALITY IN APPENDICITIS.

SIR: I have been following with keen interest the discussion in the journal regarding the increased mortality from appendicitis in recent years and the criticisms on the Royal College of Surgeons (in fact in July, 1930, I was one of the critics, which I now regret and retract).

For a long time now I have been wishing to ventilate my views on the subject of "major surgery and who should do it", but have hitherto hesitated.

As regards the increased mortality in appendicitis in recent years, from my observations I do believe that it is undoubtedly due to the unskilful surgery of non-qualified, inexperienced and incompetent operators—self-styled surgeons—who have "just" obtained their M.B., B.S. degree and have become obsessed with the idea that they are therefore qualified to be let loose on the unsuspecting and uninformed public. I keep at hand THE MEDICAL JOURNAL OF AUSTRALIA of September 29, 1934, and read to my patients (when necessary) this part of the leading article: "The next aspect to be discussed is what criterion medical practitioners should adopt in deciding to undertake critical operations. There is only one criterion and every medical practitioner knows it. If this patient were the person who is dearest to me, would I like him to be operated on by a medical practitioner with my experience and my surgical ability?"

It has always been a most striking fact that the younger "would-be surgeons" seek the best surgeon they can get (and often actually require the presence of a second one) for operations on one of their kith and kin.

Bertrand Cook, of Boorowa, writes in THE MEDICAL JOURNAL OF AUSTRALIA, November 3, 1934, thus: "I cannot speak for general practitioners in the city . . . but after close on ten years' experience, operating on hundreds of cases of appendicitis of all types and grades . . ."

First of all, he says "hundreds of cases". The minimum number justifying this term would be two hundred, representing an average of twenty cases *per annum*.

I have been practising in Myrtleford for six years. During that time acute appendicitis cases have averaged approximately two per thousand *per annum*. It would be interesting to me to know the population of Boorowa and district.

Next, I would like to know if all those hundreds of cases of appendicitis operated on by him were also diagnosed by himself alone or in how many cases he sought another man's confirmation of his diagnosis and how many he has diagnosed and operated upon for chronic appendicitis? I have seen, in consultation, many cases in which recent graduates have proposed to operate for appendicitis when this condition was not present and, when the appropriate medical treatment has been ordered, recovery has followed. I have also seen the distressing results of incompetent surgery in other conditions. Recently a young graduate introduced himself to me with the words: "I will not require your services much as anaesthetist, because I do appendicitis and even all gall-bladders under local or spinal anaesthesia."

In *The General Practitioner*, July, 1930, there appears a letter by me on the "Australasian College of Surgeons" controversy. It begins: "Sir: Personally I have always been in favour of the Australasian College of Surgeons . . .", but I also severely criticized the proposed methods of advertising it. I wholeheartedly retract this. I have completely changed my mind. I have advertised the College in the interests of the public ever since.

I have always absolutely forbidden any of my *locum tenentes* ever to attempt major surgery.

I have for my patients who required major surgery always called in a surgeon to do the operation. I say emphatically that it behoves us general practitioners to educate the public on surgery in our own and the public's interests.

As regards the increased mortality in appendicitis, I am firmly of the opinion that other contributing factors to this increase are these times of stress, young M.B., B.S. being up against it to make a living. They cannot overcome the temptation to do an appendicectomy because they see a chance of making financially in one operation as much money as they would have to see twenty to forty individual patients for to make the same amount.

Is it any wonder that the death rate in surgery generally is so high when these things can be perpetrated?

I think it behoves the authorities of the British Medical Association to remove this temptation from young graduates. I would recommend that ways and means be found by which an undergraduate could not receive his M.B., B.S. degrees except under conditions which prohibit him absolutely from doing independent major surgical work until he has been admitted as a Fellow of the College.

Yours, etc.,

Myrtleford,

A. L. J. PETERS, M.B., B.S.

Victoria,

December 9, 1934.

#### Obituary.

ALBAN BOWER BEST.

WE are indebted to Dr. A. P. Derham for the following appreciation of the late Dr. Alban Bower Best.

As recorded in the issue of September 8, Dr. Alban Bower Best died on August 26, 1934, at his home in East Kew, Victoria, after a short illness.

Dr. Best was born on February 3, 1880, at Hawthorn, Victoria. His father was Mr. A. T. Llewellyn Best, of

Fitzroy, who conducted a business as a chemist, established by Alban Thomas Best in 1850.

Alban Best was educated at King's College, Fitzroy, and later at Hawthorn College. He entered on the medical course of the Melbourne University about 1900 and took his degree in Scotland in 1907, where he graduated L.R.C.P. (Edinburgh) and L.F.P.S. (Glasgow).

After holding a resident appointment at the Bedford County Hospital he returned to Victoria and first practised his profession on the west coast of Tasmania, then at Heyfield, in Gippsland, Victoria, and finally for about ten years in East Kew. During most of the latter period he held the appointment of honorary clinical assistant to outpatient physician at the Children's Hospital, Melbourne.

He was carried off by an acute infection in the middle of his active practice, and left a wide circle of friends and patients to mourn his loss.

His interest in social affairs made him a valuable citizen. He was a keen bowler and was president of the local bowling club for some years, was a member of the Council of Trinity Grammar School, Kew, and took a leading part in Masonic circles.

He married Miss Armstrong, sister of the late Dr. G. W. Armstrong, and his widow, one son and one daughter survive him.

Although an Australian, Dr. Best had the manners and the attitude to life of an English gentleman of the last century. He was quiet and gentle and thoughtful in all his dealings, both with his patients and with his friends. Even when provoked, which was very seldom, he was quite incapable of saying or doing anything which could hurt. Both in his private and in his hospital practice he was careful and punctilious and thorough, and never spared himself in the effort to achieve the best results for those under his care. So remarkable was he in these attributes of kindness and thoroughness and punctuality that his qualities were sometimes a little embarrassing to his colleagues during his rare absences from the Children's Hospital. It happened not once, but many times, that patients who had come to see him departed, refusing to see any other doctor, saying they preferred to wait for Dr. Best's return.

The regard in which he was held by these less fortunate people was reflected in his private life, as, although his life was very quiet and unostentatious, the very large number of friends who attended his funeral was sufficient tribute to the esteem in which he was held.

Dr. J. Newman Morris writes:

The sudden death of Alban Best was deeply regretted by his friends, who experienced a feeling of personal loss. I was at school with him and later a fellow student, and for the last ten years we had much personal and professional association together. In all my relationship with Best for over forty years he displayed the same unchanging qualities of kindness, good humour and loyalty which marked him as the very lovable character he was—beloved by family, friends and patients. He is being missed very deeply, and especially so by his bereaved widow, son and daughter.

### Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser", pages xiv, xv, xvii.

AUSTIN HOSPITAL FOR CANCER AND CHRONIC DISEASES, HEIDELBERG, VICTORIA: Resident Medical Officer.

DEPARTMENT OF PUBLIC HEALTH, PERTH, WESTERN AUSTRALIA: Junior Resident Medical Officer.

HOBART PUBLIC HOSPITAL, HOBART, TASMANIA: Junior Resident Medical Officers.

LAUNCESTON PUBLIC HOSPITAL, LAUNCESTON, TASMANIA: Resident Medical Officers.

PERTH HOSPITAL, PERTH, WESTERN AUSTRALIA: Radiologist.

QUEEN VICTORIA HOSPITAL, MELBOURNE, VICTORIA: Medical Superintendent.

VICTORIAN EYE AND EAR HOSPITAL, MELBOURNE, VICTORIA: Resident Surgeons, Post-Graduates.

### Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmmain United Friendly Societies' Dispensary.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Prudential, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associate Friendly Societies' Medical Institute. Chillagoe Hospital. Members accepting LODGE appointment and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	Officer of Health, District Council of Elliston. All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

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